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PRINCIPLES OF EDUCATIONAL PRACTICE

BY

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TO
MY ALMA MATER
THE COLLEGE OF THE CITY OF NEW YORK
THE EXPONENT OF
EQUALITY OF OPPORTUNITY
AND
DEMOCRACY IN EDUCATION

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PART I

THE MEANING AND FUNCTION OF EDUCATION



CHAPTER I

THE FUNCTION OF EDUCATION

Education From a National Standpoint.—In our political and social development there have been two conceptions to explain and justify the existence of the state. These are extremes in aim and spirit and have given rise not only to limitless discussion and conjecture among philosophers and students of political and social sciences, but even to bloodshed among the classes constituting the social group known as a state.

The Older Theory: The Individual for the State.—The first and the older of these two theories of the state holds that the individual exists for the benefit of the state. The state is supreme. State preservation is the highest function of the individual, both as an individual and as a member of society. Personal pleasure and ambition, family ties, and even life and limb must be unhesitatingly sacrificed at the will of the ruler if the welfare of the state is threatened. Assyria, Egypt, India, Sparta, the modern Mohammedan countries are the classic examples of the civilization and the political organization which have been founded upon the complete repression of the individual.

The State for the Individual.—The more modern conception maintains that the state exists for the benefit of its members. The highest duty of the state is therefore to promote the well-being of its component individuals. Their rights are supreme, their will the ruling force, their needs the ultimate aim, for they are the state. This theory holds that all individuals have ceded certain rights to a central body, the state, for their own better protection. They created the state, they

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can recreate and reshape it, make the most radical modifications, if their happiness and their well-being demand the change. This conception of the state shows appreciation of the true worth of man, the apotheosis of the individual. This doctrine is responsible for the rise and growth of republican government, the separation of church and state, the death of the divine right of kings. In the sixteenth and seventeenth centuries it secured religious freedom, in the eighteenth and the nineteenth, political freedom, and our economic soothsayers predict industrial freedom as its result in the twentieth.

Conclusion for Education.—Opposite as these two views are, they nevertheless lead to a common conclusion when viewed from an educational standpoint. If the state is supreme and its welfare is the center about which individual life must revolve, then its growth and power depend upon the moral strength and intellectual enlightenment of its members. In the final analysis the state is no stronger than its representative member; like a chain, it is only as strong as its weakest typical constituent. The better the development of its component individuals, the stronger will the state, as a whole, be. Its final safety and ultimate permanency lie in the education and progress of its members.

If, on the contrary, the state exists for its individuals, the very best protection that it can give to them is to help them realize their own native powers, to teach them to use their own strength and to rely on their own resources.

We know, full well, that we are destined to a life of social interdependence and mutual social help. True social efficiency can be attained only when each individual is prepared to contribute his best endowments to society and to enjoy the advantages which society has to offer him. This process of self-realization through social life is the highest result of the educative process. From the educational standpoint, both theories seem to teach the same lesson, viz.—*Education is the greatest function and the final safeguard of society and its organized form, the state.*

What Kind of Education Should Society Give?—Admitting this broad and theoretical conclusion, we come to a consideration of the kind of education which society must give. Before attempting to formulate a program of education, we must analyze very carefully the nature of the individual whom society is to educate. All human conduct and action are outward expressions of inner motives; they are only the resultants of conflicting inherent impulses. If we turn the searchlight upon our inner motives, we find that each individual is the slave of two instinctive tendencies, all-powerful and all-controlling.

Conduct in Terms of "Individuating" vs. "Socializing" Nature.—First, we note the "Individuating Nature" which impels man to be himself, to differ from everybody else, to excel others, to stand above and apart, to lead. The teacher, the reformer, the inventor, the social and religious leaders are people with strong individuating natures. They assert themselves, set up new standards of civilization, of right and wrong, of good and bad, because existing conditions, satisfactory to the average person, offend them. They are the prime factors in the movement for progress; they are the moral derricks that lift mankind to a higher plane and a nobler destiny.

But let us note the implication; how can we excel and lead others unless we associate with them? The individuating nature, in trying to assert itself or merely to make itself manifest, must give way, partially, to a second and almost opposite impulse, the "Socializing Nature." We suppress our individuating natures to such an extent that we become, at least, tolerable in the society of our fellow men. We find a peculiar pleasure, therefore, in being in the company of others. This social nature not only makes communal life possible but encourages us to follow as well as to lead, to remain partially content with existing conditions, to live within the standards and customs of the rest of the community.

Each person is hence a duality, a composite of two contending forces, one striving toward individualization and the

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other toward socialization. Should society, in its education, suppress the individuating nature? Evidently not, for then all initiative, all invention, all improvement, all progress would be stifled. Stagnation and decay would be the inevitable results. Should society, on the contrary, then give to the individuating nature unlimited sway and allow it to express all its inherent promptings? This may be an attractive ideal to some, but it can lead only to an exaggerated ego, to selfishness; it puts a premium on domineering haughtiness; it unsocializes the individual and makes organization impossible. Individuality is a blessing indeed. But too much individuality is as bad as too little. It is an infallible sign of an anti-social personality.

The question is not, therefore, which of these two natures shall we develop and which neglect. Both are inherent; both make up the sum total of man; both help make the balance which means safety. The problem is rather, in what proportional relations shall we develop these two natures so that man may live in harmony with himself and the rest of mankind. The best possible education, from the point of view of society, emphasizes both the individuating and the socializing nature. That education, then, is the best which gives the individuality the greatest possible latitude, the freest possible development that is consistent with the welfare of the rest of society.

How Can This Ideal Be Realized?—We have accepted an ideal in education, an ideal both broad and liberal. The very vital problem which confronts the teacher is the practical one of how to attain this ideal, how to make it approach reality. Let us consider the solutions offered by the great figures and the leading thinkers in the history of education.

I. *Education as Harmonious Development.*—Many believe that education can realize this goal if it will seek to give each individual a “harmonious development of all his powers and capabilities.” For a long time the definition of education which held sway declared that education was the process which sought the harmonious development of the individual.

This is the Greek ideal which many would eagerly set up to-day as a modern desideratum. This was the educational dream of Plato and his followers for centuries. Will such a conception of education lead to a realization of our ideal? Let us see.

What is the whole scope of the educative process, according to this conception? The individual. An education which sees no further than the individual, whose field of operation does not transcend the individual, is narrow. In the final analysis we are social beings and must be prepared for life in society. Our highest development is attained only through life and contact with others. All individuals are social individuals, and all society grouped individuals. Education which seeks only the harmonious development of each individual's powers does not point sufficiently to a training which will fit man for his social environment.

Then, too, why should man's powers be developed at all? Why do we consider them an asset in life? For the same reason that everything else that is valuable is so considered,—for its use. A picture is valued because of its use in giving the pleasure which the æsthetic nature craves. A commodity or power is appreciated and wanted merely because it is usable. Utility is the keynote of value. Does this conception of education suggest the use to which these powers will be put in society? It merely sets up as the goal of its endeavors the attainment of harmoniously developed powers and capabilities. Before we develop our faculties, we must decide on their use, otherwise we are developing powers for their own sake. We must remember that in the economy of human life, a truism of axiomatic force is, "Aside from its function, a power has no value."

To the two limitations that were noted above we must add that it is an error to presuppose that we need a harmonious development of all our mental and physical endowments. No graver error is ever made than to labor under the belief that nature intended us to be equal. "We are born equal" is a catch phrase, as empty as it is erroneous. By nature we are

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gifted in one direction rather than in another. We have capabilities which fit us for one line of activity rather than for another. Nature shows a most decided and positive preference for specialization. She has intended some of us to do one thing, others another. There is a special niche in the great social structure that each is to fill. Our varying gifts and degrees of endowment show clearly that we each have a special message to deliver, a special mission to fulfill for society. Education must take cognizance of this primary law and give each individual a training in harmony with his natural gifts, but not a training which seeks the harmonious development of all his powers and capabilities. The person artistically gifted must be artistically trained, the intellectually favored must be educated accordingly. To give each of us a harmonious development of all capabilities would neglect our natural aptitudes, and develop us along the weak as well as along the strong lines. If the modern sponsors of this Greek ideal had taken social needs and social life into account, if they had not been so individualistic, they would have realized that each member of the community must be given the opportunity to be trained for the special life that nature intended for him in society.

As a final point in our estimate of this conception of education, we must note how impossible it would be to tell when an individual has been developed harmoniously. What is the standard of measurement? If by nature we are not all equal, harmonious development for one is not harmonious development for another. In addition to its other limitations, this standard is vague and impractical; its scope is limited and inefficient; it surely will not enable us to achieve our guiding ideal. Let us turn to a second theory of education.

II. *Education and Spiritual Inheritance.*—President Butler breaks away from the Greek conception and offers another in its stead. He defines the function of education as the "acquisition of the spiritual inheritance of the race." The followers of this standard of education set up culture as their goal, "Knowledge for its own sake" as the summum bonum

for all educational endeavor. All that the race in its history has accumulated in the fields of science, art, and ethics should be handed down to the individual as his heritage. Will this conception bring us nearer to our initial ideal?

This cultural conception of education lays too much stress on the acquisition of facts, the absorption of knowledge. Education is not a "taking-in" process. Its very etymology contradicts this idea; "e," out, and "duco," to lead, suggest a process which unfolds the powers and capacities of the child. The individual gains strength and mental power only as the capabilities of his mind are evolved and used for necessary ends. This acquisitional aim of education overemphasizes filling the mind with data, storing it with facts. This conception does not realize that what is most important in education is not the imparting of facts or the giving of culture but the development in each individual of the power to find his own knowledge. It is hence a static conception of education.

Then, too, these "culturites" who would give the "spiritual racial inheritance" rely too much upon the dead past. Living beings look to the future, which throbs with life and hope. Our goals lie before, not behind us. Education must prepare us for the life that is to be, not make us relive the life that was. We saw, a moment ago, that education should seek to develop each individual in harmony with his natural aptitude so that he may best perform the work which nature, through her gifts, has intended. Acquiring what the race has experienced in the past is no adequate preparation for one's individual work in the living present and future.

There is no doubt that the past is necessary for present and future life. But do we need all the past? Evidently not. We want only that in the past which serves to explain our present social organization and which foreshadows the probable line of future development. The followers of Butler in education do not give enough attention to the actual living present, to preparation for life in the actual social environment. Their conception of education will not bring us

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to our goal, will not help us realize our ideal. Let us try still another.

III. *Education and Habit Incultation.*—James conceives education as the process which inculcates in an individual such habits of thought and of action as will fit him for his physical and social environment.

The superiority of this conception of education over the two that we have just presented is unquestionable. It looks to the future, it seeks action rather than mere knowledge, it strives to prepare the individual for his proper place in society. Life's necessary future adjustments are set up as the goals to be attained; educational endeavor seeks to subordinate the whole personality to them. This conception of education makes for the greatest economy in mental and physical life. All necessary actions, all essential adjustments are made automatic, and the individual thus becomes self-acting in all vital situations. Proper conduct is guaranteed through force of habit.

But may we not question its desirability as the final stage of human development? The supreme force in human life is reason, not habit; the most desirable individual is the rational, not the automatic one. The highest form of character development is found in the individual who is self-controlling and self-directing. Would not this conception of education in terms of habit make all life routine, every individual a duplicating machine? To habituate life to the extent that James advocates would make us all slaves of our yesterday's selves. Our ideal sought to give the freest possible expression of the individual consistent with social welfare. To reduce life to the plane of habit means curbing and repressing the freest expression of the individual.

IV. *Education and Complete Socialization.*—In recent years sociological and pragmatic thinkers have tried to make their impress upon education. Prof. John Dewey, a representative leader in these schools, has furnished us with his contribution to educational thought. His conception we can safely submit as the means of attaining the ideal we set be-

fore ourselves at the beginning of the inquiry. The strength of the position of the sociological educators lies in the fact that their education seeks the harmonious adjustment between individual and society. Education for social efficiency is their shibboleth.

Every action we perform, every choice we make, is dictated by the needs and the organization of society. We are pursuing this work, striving in this field of activity, because society has either made it the most attractive for us, or has forced us into it. It is society that establishes for us our final ends, and sets up our ultimate standards of conduct.

Mentally, too, our judgments and decisions are fixed for us by society. We judge, we reason, we select, in accordance with social standards. Our moral and ethical views reflect the moral and ethical standards of our society. Mind, then, is nothing more than a social function. The sole aim of the school must be to fit man for a most efficient social life. But we must not erroneously make social life and citizenship synonymous. Citizenship is only a small part of the social training which the school should give. As a member of society, the individual has more duties than the mere political ones. We must insist that the individual's membership in his family, in his club, in his trade, and in his church is just as important. The school must reflect all these phases of life. It must teach the industrial arts, the vocations in society, so that he may find his place in our present industrial organization. It must seek to develop leadership, for our democracy depends upon the people for its leaders. Training for mere citizenship is not enough; the school must train for complete social life. To quote, "Apart from the thought of participation in actual social life the school has no other end or aim."

The School as a Training for Social Life.—How can the school train for complete social life? First, through its discipline and control, and, second, through the curriculum.

School Discipline and Social Life.—In our class-rooms we have rules of conduct, attendance, industry, neatness, all striving to attain the whole galaxy of school virtues. Strict ad-

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herence to these rules is demanded of the children, because we hope that, through constant repetition, these will become habits. The child obeys, not because he realizes the necessity of the regulations, but because he is driven to obedience through fear. The reason for these rules we seldom, if ever, give. We demand that the children walk up one stairway and down another. Ask them why. The children have not the faintest idea that these regulations are made for emergencies of fire and panic. They do not see that these rules are inherent and absolutely essential in the social organization of the school. They obey blindly, for these rules are arbitrary to them. But blind obedience to a set of arbitrary rules will not develop character, the power of self-direction and guidance so necessary in real social life. Every regulation in society has its origin in social needs. Every law that has been added came to safeguard some one's interests, to prohibit some one from trespassing on the rights of others. Just as society's needs have prompted our laws for society, so the social and communal life of the school has given rise to the regulations made and enforced by teachers and principals. Few children realize the need of the regulations. Hence, they disobey whenever an opportunity presents itself. In their eyes the rule is made to deny them privileges and make more burdensome the lot already too heavy for them. Many children, therefore, find the joy of revenge in disobeying school regulations. The school, then, too often falls short of its possibilities in training for rational social conduct.

School Curriculum and Social Life.—Let us apply the same thought, social efficiency, to the school subjects. Just as the child does not see that the school regulations are socially necessary, so, too, he fails to realize that what we teach him has social value. When the child can glibly repeat that a mountain is a high elevation of land, or that a cape is land projecting into the water, we feel that our work is completed and we rest content. But who cares whether a mountain is only an elevation of land, or a cape a projection of land? We do not, and surely the child who repeats these definitions

is even less concerned. Of what importance is it to teach such a fact? What answer would we give our children if they asked such a question? These geographical definitions must be taken out of the realm of mere facts and given social significance, interpreted in terms of social need and social life. From the social point of view a cape is very important; it is the greatest danger point in commerce; the mariner and the foreign trader are highly interested in these projections of land. Capes break the coastline, make harbors, produce shipping facilities, and thus give opportunity for intercourse between nations. The continent with the least number of capes—Africa, the Dark Continent—is the least civilized; the one with the greatest number—Europe—is the center of intellectual life. We are interested in capes because they have significance for human life. When aërial navigation is developed to the same point that we have reached in water transportation we shall emphasize, in our geographical teaching, not capes, but promontories, mountainous capes, and plateaus, for these may be the great harbors for the future winged ships. But, in all cases, social needs determine what is to be taught. For similar social reasons we are interested in mountains, rivers, all of the important geographical forms of land and water. Their real significance is not physical but social.

The same thought applies to the teaching of history. If the topic is "Plymouth Colony," great stress is too often laid upon the fact that one hundred five souls came, that a child was born during the voyage, that the Pilgrims landed at Plymouth Rock, *et al.* Upon closer examination, what difference does it make whether one hundred five or one hundred twenty-five souls came, whether they landed at the rock or on a sandbar? Our national history would have been the same. The real vital point to remember in teaching "Plymouth Colony" is that, before landing, the colonists drew up a compact which provided for a democratic rule and election of officers. Here we see the seeds of modern democracy planted in the new world. Those facts which reflect present

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social conditions and organization must be considered of prime importance; the others are of secondary consideration, whose loss need be of no concern. The importance of the past lies in the social organization of the present.

The same point of view may be applied to arithmetic and to grammar. We burden the child with carpeting examples, partial payments, alligation, compound proportion, and a dozen other unreal topics concocted by text-book writers and school superintendents, their only excuse for the introduction of these unnecessary subjects being that they train the mind. Why cannot the mind be trained through examples that show actual business practices and business needs of social life?

Teachers too often present numerous technicalities in grammar without emphasizing their application. A class may know the abstract and the concrete nouns, their definitions and examples. But unless a child can see the use of these and their need in social life he is engaged in a process of mechanical acquisition, without vital motive and interest. Show him how useful these facts are in his composition and in his speech, how they enable him to introduce variety into his sentences, how he can change "I like my friend" into "I like his friendship," "his friendship pleases me," etc., and the two kinds of nouns have a new meaning for the pupil. To learn these terms becomes a rational process. Unless the composition can reflect the use of grammar, the latter becomes a dead subject, whose mastery is prompted by fear and not by a live motive which results only from a consciousness of social use.

Our problem was to find how we can realize the ideal that we set before us, viz., "the freest possible development of the individual consistent with society's welfare." The answer we formulate after our study so far is: By preparing the individual for complete life in society, by making the school and the curriculum reflect the social life and organization, by making them both part of life itself.

V. *Education as Adjustment*.—The last conception of the educative process indicates the tendency and the direction

which our endeavors must take. The immediate problem is, therefore, to formulate a more definite conception of education which will be in harmony with those sciences which deal with life and living. Our study thus far has viewed the problem from the individual's point of view, from his motives, his needs, his adjustments. Attention was centered on the subjective side of the process of education. The educational problem presents two factors: (1) the person to be prepared for life, and (2) the environment in which he must live. We must now elaborate our statement of the functions of education to include the second element, the objective aspect.

Despite all that has been said in emphasis and reemphasis of the social aspect of life, it must not be concluded that it is the only phase of existence which governs education. If we were to scrutinize each activity to be accomplished, each relationship that the individual must establish between himself and his surroundings, we would find that they can all be grouped under three heads: activities and relationships that are (a) physical, (b) mental, and (c) moral.

The Phases of the Environment.—The individual's environment presents certain primary demands upon him which necessitate the simplest form of physical activity. Walking, running, lifting, pulling, breaking, are a few of a host of actions which the individual must perform in order to secure his food and satisfy those wants whose gratification preserves and sustains life. These physical activities, simple though they may appear because of usage and repetition, present numerous problems upon closer application. In all of them the individual is continually called upon to make a choice, to judge, to compare, to reason, to discover the best mode of adjustment, the course which will realize the desired result at the smallest expenditure of effort and energy. The explanation of this close interdependence of physical and mental activities is almost apparent. Man always seeks the short course to his goal, the path of least resistance and effort, not primarily for the reason assigned by many sociologists, viz.,

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man is naturally a lazy animal, but because man's energy and vitality are definite and limited in quantity. His wants, however, are infinite. If he is economical in the use of his powers, and seeks that route which enables him to attain his end with the least dissipation of energy, he can satisfy a greater number of wants; he has a larger surplus of vitality; after the mere physical needs are answered he can minister to mental and spiritual wants, he can achieve new and higher endeavors. The whole scope and horizon of life are broadened. But, if human wants are not satisfied at the expense of least effort, man is in danger of finding himself poverty-stricken in energy, bankrupt in vitality, with ever-pressing needs of real life constantly craving satisfaction. For this reason nature has wrapped with every physical act a host of intellectual concomitants, so that every movement of the individual is as much mental as it is physical.

But man does not live his life and satisfy his wants by himself. By nature, as well as by personal choice, he is gregarious, social. His ultimate welfare, his best mental development, as well as his personal safety, lie in association with his fellow-men. This social aspect puts a new phase upon existence. It is a primary law of social ethics that every privilege entails a corresponding obligation. There are rights and privileges of others, therefore, which must not be infringed upon. There are personalities of others which must be respected even as each man respects his own. Standards of right and wrong, just and unjust, rules of conduct and morality are thus established, so that not only is personal liberty safeguarded but each individual may take unto himself the greatest latitude of personal freedom compatible with the welfare of the rest of the community.

Education as Adjustment to the Environment.—Education, then, is that process which seeks to adjust the individual to his physical, mental, and moral environment. Unless the individual can properly adapt himself to all his surroundings he will find that maladjustment means a life of friction and displeasure, if life at all. True happiness and real efficiency

in life depend on the degree of adjustment to the complete environment.

Education a Changing Ideal.—Education has been severely criticized because it is ever changing. In this brief study we have met thus far with four distinct conceptions. These are relatively modern ones. How many they have supplanted no one can tell. But, if education is conceived as a process of adjustment to the physical, mental, and moral environment, it must be ever changing to conform to the new tendencies in the world about us. The environment has been progressing, moving upward and onward in its growth; it was never static, it is becoming more dynamic every day. If education is to be efficient, if it is to adjust man to this ever-changing and ever-growing environment, it must change and grow accordingly. As life becomes more complex, adds new wants, turns former luxuries into present necessities, education must keep changing its scope and function. Education which is not constantly undergoing this change is static, it fits for life that was, not for the actual living present. The instability of education, its very lack of permanence of form, is, therefore, a wholesome tendency and reflects its endeavor to keep abreast with progressive movements in all phases of life.

True Meaning of Adjustment.—But we must be sure that we understand the word adjustment as used in education. Adjustment means a change to fit; it presupposes, therefore, active bodies. Static bodies do not change. The previous discussion may lead one to think that the individual changes himself to conform to his environment. Such a view is erroneous, for it conceives the world as fixed and unalterable. This notion is diametrically opposed to a progressive and true meaning of the term adjustment as used in education. Man comes into the world with definite wants and desires. He draws upon the environment for their satisfaction. If he finds conditions which do not suit himself he changes them, not himself. The old cave was unsatisfactory; man built a house; all the knowledge that he can gain by observing nature's workings is too limited for his intellectual sphere; he there-

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fore utilizes the laws of nature, experiments, evolves science and machinery, and harnesses nature; the food that he finds in its natural state he feels is not conducive to best health; he therefore changes its form and composition, through fire, so that it satisfies his needs to the fullest extent. "Adjustment means, not that the individual fits himself to the world, but that he makes the world fit him. Man is not the passive victim of his environment, but has such power of modification and control as to either transcend or virtually recreate his environment."

SUGGESTED READING

- BAGLEY. *Educative Process*, pp. 40-65.
BOLTON. *Principles of Education*, Chap. 1.
HORNE. *Psychological Principles of Education*, Chap. 3.
JAMES. *Talks to Teachers*, Chap. 4.
MONBOE. *Text-Book in the History of Education*, Chap. 14.
O'SHEA. *Education as Adjustment*, pp. 76-117.
RUEDIGER. *Principles of Education*, Chaps. 3, 4 and 5.
SEARCH. *An Ideal School*.
SPENCER. *Education*, Chap. 1.

PART II

EDUCATION AS PHYSIOLOGICAL ADJUSTMENT

CHAPTER II

THE PHYSIOLOGICAL BASIS OF EDUCATION

The discussion of the function of education is rather general, as interest is centered in the point of view, in the attitude that is to be taken toward the subject. We began with a general inquiry into the function of education by considering the subjective side of the question, the individual. His inherent tendencies, his motives, and the various educational theories that sought to carry out the educational ideal were studied. Throughout the initial discussion emphasis was laid on what education must do for the individual. This was followed by a study of the objective aspect of the problem, in which the environment and its component elements were made focal. The sole aim was to find the means of harmonizing the individual with his environment rather than with himself. The old systems of education, by trying to develop all human power, sought to develop man as a harmony in himself. Modern educational tendency seeks to develop the individual along those lines which will enable him to live in concord with his complete surroundings; it strives, therefore, to achieve, as its dynamic ideal, man as a harmony in society.

The analysis of environment will determine the entire future development for this study. Since education is an adjustment process, and since the relationships which must be established between the individual and the environment, are physical, social, and mental, our subject will be treated from three aspects: (a) the Physiological Aspect, seeking to fit the individual for the physical life and environment; (b) the Sociological Aspect, seeking the social life, the social and moral adjustments; and (c) the Psychological Aspect, aiming

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at that mental development which will enable man to attain the best mental adjustment. Education viewed from these three aspects ought to give a fairly complete outlook upon the educational problem, upon the field and scope of the endeavors of the teacher, the parent, and the directors of the child's destinies. Our immediate topic, then, is: "Education and the Physical Environment."

The Brain as an Organ of the Body.—The simplest forms of animal life are little more than mere reacting machines. They move only when disturbed, eat only when food comes to them. Their environment is their complete master. But, as we ascend the scale of life, we notice a continued increase in the control of the environment. This is due to a differentiation of function that comes with an increase in the number of organs. One part of the body seeks food, another defends, still another watches for danger, while a separate organ controls locomotion. Each organ becomes specialized just as each worker in a modern factory is forced to become specialized in his particular specific function or process. An intensive study of evolutionary history from the simple biological forms to the higher animals, finally reaching man, shows that progress is always from a mass of unrelated cells to groups of interdependent cells which are developed into organs, each functioning to enable the owner to better control the forces of his environment.

If we conceive this specialization of function to be characteristic of animal development, we may be better able to answer the question which must be the initial problem in our study of the physiological aspect of education, viz.: "Why was the brain added to the sum total of our organs?" Surely for no other purpose than the one which has prompted the addition of all other organs—special function for better adaptation. This answer is consistent with the theory of evolution, and explains the continuous development of our separate organs by the same principle.

James, in his "Talks to Teachers," says, "Consciousness would thus seem in the first instance to be nothing but a

sort of superadded biological perfection, useless unless it prompted to useful conduct and inexplicable apart from that consideration." From the physiological point of view the brain is an organ of the body, with functions whose aim is primarily the aim of all other organs, viz., better adjustment.

Brain and Mind.—Nevertheless, the teacher is always interested in the development of the mind, not the brain. Often in his mental haste he confuses brain and mind, at other times he thinks of mental development aside from brain development. This basic error must be noted before further progress is made in this study.

Their Differences.—It is highly important that we keep brain and mind apart. The brain is a physical organ, something real, concrete; the mind is ideal, it is a function of the brain. The relation between muscle and action presents a close analogy; the muscle is a physical organ, the action is its function. One does not see motive force, yet he knows of its existence through its results. So, too, with mind; it is judged by its accomplishments. The mind is the total realization of all the possibilities and powers of the brain. The mind is the function, the brain the organ, of consciousness. The development of the one means the development of the other, since the development of function follows only as we develop the organ; hence, not only does brain development precede mental development, but brain development becomes a problem for education as well as for physiology. This becomes evident in the consideration of the complete interrelations which exist between the two.

Their Interrelation.—In early youth the brain substance is plastic and very impressionable. This is why the period of youth is the period of educability. Every impression, every stimulus, every new experience molds the claylike organ, the brain, in the early stages of growth. The nerve cells are ultra-sensitive to the slightest impingements. The entire nervous system is very quick in its reactions upon the environment. This receptivity lasts until the age of about eighteen or twenty. After twenty-five the nerve cells become less plas-

tic and the nerve connections become fixed. Horne tells us that, after twenty-six or thirty, "a new science is rarely acquired, a new language rarely spoken without accent." As the brain substance loses its plasticity, its action and its paths become fixed and habitual; a change is difficult. This explains, physiologically, the radicalism of youth and the conservatism of old age. Anything new, revolutionary, attractive, fires the impressionistic mind of the young man; but the older person regards the same experience phlegmatically and with no small degree of skepticism. His mind assumes a fixity of attitude and interpretation because the brain, the receiving station, is no longer so intensely alive to new impressions and varied stimulations.

Conclusions for Education.—Youth, physiologically considered, is the period, therefore, when the individual can be influenced most easily for good or for bad. The seeds of a moral and ethical life must be planted at this stage. If the brain cells are not subjected to the proper training and discipline in this period of infancy, when they are plastic, it is doubtful whether the most patient influences of later life can counteract or affect the perverted or neglected development of the early years. We all know that we are too often the slaves of early practices which have become fixed in us as the brain has lost its impressionability. We reason and decide upon a change, but the matter ends there. Our lives in this respect are not without their parallels in the physical world. The sculptor applies his magic touch and impresses his genius on the clay while it is soft. He can bring out the finest line and the gentlest suggestion without difficulty. But once the clay has hardened and has lost its plasticity, imperfections cannot be remedied; they are held fast in the newly acquired rigidity.

The late Josiah Flint, after years of tramp life and study of the criminal classes, concluded that the germs of criminal life can be traced to this early period. From actual association with the criminal classes he found that a large percentage of the inmates of prisons and reformatories can trace

their downfall to criminalities acquired in early life. We must, therefore, agree with Professor Horne when he says: "A man is little more than the sum total of all the nerve reactions acquired in youth."—"Mental habits are primarily brain habits. Mental inefficiency is primarily brain inefficiency."

The great function of education is to develop the possibilities latent in the brain. "Develop" must be spelled with capitals, for education is not a creative force; it can originate nothing new. The brain has infinite possibilities which lie dormant, waiting for the magic touch to become actualized. Education is the force which causes the human brain to bud, to blossom, and to fructify. The fruit is a well-developed mind approximating self-realization.

Observations Which Are Indices of Brain Conditions.—Since the brain, its condition, its formation, its characteristics, and its inherent powers form the real basis of mind, and hence the foundations upon which we are to build in our education, it becomes necessary to stop and ask what symptoms and manifestations of children's work and activity will indicate their brain condition. The following is an attempt to formulate a systematic scheme of observing children for the physiological condition of the brain, the organ we are to attempt to impress and influence. Its items are gathered not only from observation and from studies of medical inspections, but also from suggestions of authorities on the nervous organization of children, from the works of educators like Rowe and Warner, who have specialized in this phase of development.

I. Face.

- A. *Forehead.*—This part of the face expresses our mental conditions and attitudes, but not the slighter impressions. It is the deeper feelings and effects following the excitations of the brain caused by joy, sorrow, concentration, surprise, that express themselves in no unmistakable signs here. The forehead is an index of the intenser mental states because it is

formed by two sets of muscles, (a) a vertical set and (b) a horizontal set. In the brain excitement accompanying surprise the vertical muscles contract and produce horizontal wrinkles that are seen in this emotional state. In concentration the excitement in the brain cells stimulates the nerves controlling the horizontal muscles and vertical wrinkles result. When the forehead expresses the deeper excitations of the brain it is a fair index of a normally active brain, responding to joy, grief, effort for deep thought. But when the forehead is continually in motion, expressing every change in the brain activity, responding to every varying mental feeling, it is generally a common sign of weak brain control.

Thus, of a whole school examined, Warner reports that forty-one per cent. of the boys and forty-six per cent. of the girls with overacting frontalis, over-responsive foreheads, were rated by their teacher as C and D in lessons. While it is not safe to condemn a child whose forehead shows poor control and over-responsiveness, such a condition is a fair warning sign.



B. *Eyes*.—Both the eye and its surrounding muscles are excellent indices of brain condition, temporary and permanent.

1. The muscles beneath the eye are very responsive to the nervous energy in the brain at a given time. In the normal condition the muscles are rounded out and give a healthy tone to the surroundings of the eye. But in hours of fatigue and brain debility due to (a) weakness, (b) overwork, (c) poor nutrition, they become baggy and lose their healthy tone and fullness.

2. Color, brightness, and movement are the essentials to look for in the eye itself. But movement is the most important factor.

The eye governed by the healthy brain is active, alive, seeking here and there. The reason is found in the fact that a healthy child's brain is overstocked with energy which is constantly striving to work itself out in action of one kind or another. This pent-up energy drains itself most easily along the nerve routes connected with this sense organ, hence the restlessness of the bright eye.

But too much movement is bad. It may show, not surplus

brain energy working itself free from its cage, but poor brain control, a brain not strong enough to master the muscular movement. This ultra-activity is bad, for the eye does not stop long enough on any presentation to take careful observations. Such children are poor in judging colors, sizes, shapes; in later classes they read words that are not on the page, omit many that are there. They become the poor spellers, for they cannot look long enough at a word to carry away a good, complete visual image. How many teachers ever stop to ask themselves why a particular child is poor in spelling, good in arithmetic, grammar, and the other thinking subjects? They simply decide that the child does not study, and apply the usual form of punishment. How many stop to find out why children misshape the letters after repeated explanation that the "b" crosses here  not there . "Carelessness" is the prompt verdict and the "D" is placed in the effort column in the roll book.

A reliable test for good eye movement is direction. The teacher should explain the changing directions of the coast line of a continent, all the time pointing to the outline of the map. If the eye keeps following the pointer, brain control is good. The child who has poor eye movement shows a lateral, sideward motion with no attempt, or no apparent attempt, to focus on any one point or series of objects in the regular order demonstrated by the teacher.

- C. *Facial Movements.*—Like the movements of the eye, facial movements show the amount of brain activity and brain energy seeking freedom. An active, healthy brain gives a changing expression, a play of movement about the mouth, an enlarging or closing of the eye space, with each changing idea or emotion. If, on the contrary, the expression is steady, changing only when the teacher introduces a humorous idea, a pleasant thought, or a pathetic interest, it is a sign of a limited stock of energy in the brain.

It is needless to point out that undue or unusual expression in the facial muscles is usually a fair sign of weak brain control. Children who are continually making grimaces, changing facial expressions without cause are nervous. But the exceptions are important and numerous even here. Many chil-

dren, especially boys, are quick-tempered. In their mental wanderings their imaginations carry them afar. They picture themselves in battle against the enemy, in duel with the robber, a pirate struggling against attempted capture, and the like. The child often feels these imaginary struggles intensely and gives expression to them through distended nostril, glare of the eye, and other facial movements, characteristic of this state. These signs must not be construed amiss. No child must be judged silly or weak-minded for an occasional grimace or gesture, which the tired and busy teacher cannot explain at the moment.

- D. *Minor Points.*—We must not go too far in our interpretations. Many consider the formation of the mouth, size and shape of the chin, shape of the head, size of the head, ears, etc., and seek to draw guiding principles. Nothing is so dangerous and so unjust, for it prejudices the teacher for or against the child. All these signs are misleading, the exceptions to the rule are seen oftener than the rules. These are not reliable indices at all and should not be used by the teacher. They must be left in the province of the specialist of child study.

Even the theories dealing with the size and weight of the brain have been completely shattered and are regarded with well-merited scepticism. We know, to-day, that the brains of many savages are larger than those of civilized men of equal stature. The brain of the savage Indian has been found to be larger than that of his civilized brother. The Eskimo brain in most cases is larger than our own. We know that the number of brain cells in the brain is complete four weeks prior to birth. We must therefore exercise the greatest care in judging the child.

- II. *Hands.*—The hands are as good an index of brain activity and control as the face, though few laymen and even teachers suspect the fact. An excellent test is the "weak hand balance." The child is asked to extend his hands and arms forward until they are parallel with the floor. In the "weak hand balance" one notes the hand taking the same position as in sleep. The wrists droop, the fingers point downward, the left hand is lower than the right. Unless the child happens

to be very tired and indisposed this is a fair sign of weak brain control.

"Finger twitches" are another important index. The observer must make sure that the child's fingers are spread apart, otherwise they will give mutual support and the true condition is concealed. "Finger twitches," dropping of pencil, paper, books are very often signs that the brain is not strong enough to send out the control that is needed. In many nervous disorders of children, like ties, chorea, migraine, these two tests are considered of prime importance by the physician.

In a test conducted in the schools of our large cities it was found that forty per cent. of the boys and thirty-five per cent. of the girls with "weak hand balance" or "finger twitches" were reported "D" in lessons. While the conclusion is not inevitable and the signs are far from infallible, the results are, nevertheless, significant if borne out by additional evidence.

III. Trunk.—The healthy brain controls the trunk so that it can be held erect in standing. But a tilt or bending sideways, forward or backward may be the result of years of bad posture in sitting, working, and standing. These incorrect forms are not signs of brain condition.

Weak brain control is often indicated by *lordosis*. Children so afflicted will, when trying to reach for something a little ahead of them, bend at the loins rather than at the shoulders. This shows weak brain control of the muscles of the back. The proper place to bend is at the shoulders and a trifle below. When children are watched in profile this can be seen very readily. Although not of very immediate importance, it is nevertheless a symptom of poor brain control when seen in connection with other signs.

An interesting experiment may be tried with such children. As a rule, when they are asked to hop a short distance they fail miserably. Shifting the weight to one foot gives a "wobbly" trunk; this entails an extra strain to keep one's balance. The weak brain cannot send out enough energy to keep the trunk rigid in this state of doubtful equilibrium and shifting center of gravity. In one class of twenty-three defectives not one boy succeeded in hopping across a class-room of aver-

age width; in another the children made a very poor record compared to that of a normal group.

IV. Characteristic Actions.—A healthy brain shows actions with the following characteristics very prominent:

A. Much Spontaneity.

Signs of: Smiling of infant, cooing, hand and foot movements, eye movements, changing facial expression.

Cause of: brain overcharged with energy, which flows out to the muscles, thus giving action without apparent cause or stimulation.

Forms of Expression: (1) In unstimulated action as described. (2) In imagination. The energy in the brain may stir the various brain centers; old impressions of things seen, heard, and felt are thus called up and combined into a new experience that has no real counterpart. This accounts in part for the impossible stories children tell, for conversations with dolls, promises to them, and the whole array that an ultra-active imagination can conjure up.

Abnormal Expressions of Spontaneous Activity we find in—

(1) Illness where the brain control is weak and under little control by the child. Every slight feeling of discomfort brings action which is apparently spontaneous, but in reality provoked.

(2) Dull children who are usually quiet because they have no extra energy or initiative that is craving for expression.

(3) Action with undue regularity of movement. Thus a regular twitching of the face and winking of the eye, a blinking, a shoulder movement, a finger movement, and a rolling of head are illustrations. This is usually a sign of tics and approaching nervous derangement of considerable severity.

Treatment.—The important problem for parents and teachers is how to treat such cases. It is absolutely imperative that such children be removed from school, for other children imitate their actions. The teacher or parent must talk gently to the afflicted child. A scolding often works untold harm because these children are irritable. They should then be placed before a mirror to see how disagreeable is their habit. A desire to control these habits must be aroused in these children. Sin-

cere active coöperation on the part of the child is absolutely essential. But, in addition, expert medical aid must be sought.

Lesson for the School.—Some of these symptoms lead to many serious nervous troubles, but the early signs are so hard to detect that only the skilled observer can interpret the signs of approaching nervous chaos. A medical inspection, on a large scale, systematic, careful, and well organized, is needed to supplant the present fiasco in most of the city schools. We do not appreciate the gravity of such cases, for the ultimate results are not seen. These children drop out of our lives; their later histories are lost to us, but they come up again in the future, in hospitals, asylums, and reformatories to an amazing extent.

- B. *Impressionability.*—This characteristic is determined by the ease with which the brain is impressed by what is presented to it through the senses. The kindergartner shows the child the elementary colors; how often must this presentation be repeated before the child recognizes and differentiates them? The teacher shows the child two geometric shapes; how many times must this be done before reliable recognition occurs? Two weights are placed upon the child's palms, and it is told which is the heavier and which the lighter; how often must this practice be given before the child's brain responds correctly as the weights are changed?

These recognitions do not refer to the child's brilliancy, or intellectual ability, but to its impressionability, to the ability of its brain to receive and retain an impression as the standard of judgment for future use.

- C. *Inhibition of Movement.*—This quality of action is illustrated in the child who can obey the common negative orders faithfully. Such children show that their brain action and control have inhibitory power. Thus the teacher orders, "Stop! Do not speak out or raise your hand when you have the answer." "Cover these two points on your paper with your ruler; take pencils, do not draw until the order is given." "Take pens, do not begin until I count three." Our spontaneous impulses prompt action. Ability to combat or inhibit this natural yearning is a sign of strong brain control of body.
- D. *Compound Brain Action.*—This characteristic of action is mani-

fested in the ability to perform a series of actions or movements. Thus in physical training the child is taught one simple movement, arms forward; then another, arms upward; then another, trunk bending forward, and finally a fourth, trunk bending backward. The four movements are combined, arms forward and trunk forward, arms upward and trunk backward, and then repeated in alternate sequence.

Some children combine these and go through the exercise with accuracy and precision. There are order and sequence in their successive movements. Others, on the contrary, cannot perform this series of actions, but simply imitate those about them. Compound brain action shows better brain control, for it includes good impressionability and retentiveness.

- E. *Well Coördinated Action*.—In simplest terms, this means such brain control of body and muscles that mind and muscle act in unison. An example of well coördinated action can be seen in teaching folk dances. The girl is shown the step and she has a mental picture of it. Can she execute it; can her brain direct her feet and body faithfully? A child may have a fine picture of the outline of a continent in its mind's eye. Can the brain so direct the fingers that the child executes on paper what it has in its mind? Coördination can be tested only when the teacher is positive that the child has a clear idea or mental picture of what is desired.

Summary.—Since the brain is the organ whose efficiency determines the possibilities of mental development, we endeavored to organize a table for better, more purposeful and systematic observation of the condition and intensity of brain activity and of the extent of brain control. The scheme, though far from complete, may serve as a helpful guide for this purpose.

The Increased Period of Infancy in Man

In the light of this discussion of brain efficiency as a determinant of mental efficiency, brain development as a necessary antecedent of mental development, what can be the meaning of the long period of infancy in man? What is its educational importance?

Infancy in Man and Animal.—A few weeks after birth the little cub can run about and find its own food if necessary. The young stag, barely a month old, skips about, begins to feel life's responsibilities as he proudly surveys the landscape about him. If misfortune overtakes the parent, the offspring can care for itself. But when we come to man we find that the period of infancy is increased considerably. Great care is necessary in the days of helplessness. With all the attention that is bestowed upon us, almost one-third of the human race dies before the age of five. To understand why man's period of infancy is so protracted we must contrast the life of animals with that of man.

1. The animal is born a bundle of instincts. It can react upon the environment almost immediately, for it needs no organization of its faculties and nerve centers.

1. Man, on the contrary, is born with fewer immediate instinctive acts, but he has infinitely more possibilities to develop. He cannot react upon his environment at once, because he must wait for the development of nerve connection for the establishment of a proper coördination between mind and muscle.

When an act in the life of man or an animal is always to be performed in the same way, the action is organized before birth. Breathing, digestion, heart action are examples of such prenatal organization. An animal's daily existence is nothing more than an everlasting duplication of the same routine; its life's activities are organized at birth. But man leads a life that is full of change, variety, adjustment to needs, and, consequently, most of the human activities are organized after birth.

2. The animal relives the life of its parent. If one

2. Man lives a life peculiarly his own. Each individ-

studies the life history of any common animal he has studied the life history of its antecedents and of its progeny. Animal life is a perpetual repetition of the same needs, the same reactions, the same trials and dangers.

3. The animal leads a simple life. It has a few physical wants which are the sum total of life's call.

Man makes a special effort to cut away from the bonds of his forefathers. It is a confession of weakness to admit that one is merely reliving the life of his ancestors. Man's individuating nature rebels and demands change, a life that is distinctly his own.

3. Man lives a complex life. His wants are many, especially in the realm of the intellect and the spirit.

This final differentiation needs no comment. We may well doubt the homely phrase of Goldsmith that has become a household expression, "Man wants but little here below." Our desires are practically infinite, for no sooner is one want fulfilled than a new one of more or less importance is already clamoring for satisfaction. Our whole development consists in widening life's horizon, in prompting our individualities to continue demanding an infinite series of ever-increasing wants.

Educational Implications.—As the human race is physiologically and psychically constituted, man needs a longer period of infancy, for he must prepare for a more complex life. Education must do for man in his period of infancy what nature does for the animal in the prenatal stage—i. e., train for adjustment to surroundings.

The more complex the destiny, the longer is the period of infancy. How consistently does the chain of animal life show this! The butterfly has a simple life and a simple mission to fulfill. The cocoon bursts open, the butterfly unfurls its wings and begins to flit about at once. The little chick spends a few hours after its release from its prison shell trying to actualize its powers. It shows almost all the necessary reactions soon after its birth. The little kitten is helpless for

a few days, but its essential powers soon show themselves, and it is ready to start out on its life's journey. As we ascend the animal scale the period of infancy is constantly prolonged. The new-born ape is the most helpless of all animals below man. For an entire month the young ape cannot stand alone. It begins to move about by seeking support in much the same way as the human child. Fiske describes the manlike tailless apes of Africa and the Indian Archipelago. These are the most developed of all apes, but "they begin life as helpless babies, and are unable to walk, to feed themselves, or to grasp objects with precision until they are two or three months old." The period of infancy in man's life is far longer than in many of the lower mammals; in civilized man more protracted than in the savage.

Swift, in his "Mind in the Making," sums up our position admirably. He says: "Animals that are born fully developed are incapable of sudden adaptive changes. Their nervous systems are built to explode in certain ways and the appropriate stimulus is the igniting spark. A ready-made nervous system ceases to be efficient the moment the environment becomes changeable. Nervous structure must keep pace with the growing complexity of surrounding conditions; and, as man was born amid the throes of climatic convulsions, a nervous system with fixed reaction could not meet his needs." Hence, unlike the brutes, man must pass through a period of helplessness, a period of infancy, when the whole nervous and mental apparatus attune themselves to the complex destiny they are to serve.

Social Significance.—John Fiske was first to show not only the educational importance of this period of infancy, but also its social significance. President Butler then elaborated this conception. They both make it responsible for our present family and for the morality of the home. In man, as in the animal, this period of infancy is a period of parental love and affection. But in man this stage lasts long enough to make its effects permanent. In this period of dependence the child is the common bond between father and mother, it centers

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both their individual interests upon its well-being. Their love and hopes and aspirations are wrapped up in the child. Even after it is physically capable of caring for itself, the parents feel that there are intellectual and spiritual aspects of life to develop. This period is then continued beyond the age of mere physical helplessness. The higher the civilization the longer will this period of infancy last, for it means a period of education. To-day the educational period of infancy lasts through the kindergarten, elementary school, high school, and college, a period "almost double the psychic point of adolescence," a period which John Fiske places at a quarter of a century.

SUGGESTED READING

BOAS. *Growth of Children.*

BOLTON. *Principles of Education*, Chaps. 2, 3, 4, 5 and 6.

DONALDSON. *Growth of the Brain*, Chap. 18.

FISKE. *Outlines of Cosmic Philosophy*, II, Part II, Chap. 22.

HALLECK. *Education of the Central Nervous System.*

SULLY. *The Teacher's Handbook of Psychology*, Chap. 3.

SWIFT. *Mind in the Making*, Chap. 5.

WARNER. *The Nervous System of the Child.*

CHAPTER III

MANUAL TRAINING AND VOCATIONAL EDUCATION

The first function of education in this period of infancy is to train man for his physical adjustment. The question is, therefore, "What means has education for discharging this function?" The modern school organization has two: (a) Manual Training and the Vocationalization of the Individual, and (b) Physical Education through (1) Play, (2) Gymnastics, and (3) Athletics.

The initial topic that must introduce this first means of bodily training is obviously the reasons that make this an essential means of physiological development. There is a fivefold consideration that governs our study, viz.: (1) Psychological Development, (2) Sociological Adjustment, (3) Economic Betterment, (4) Educational Efficiency, (5) Ethical Gains.

I Psychological Justification

The Two Brain Centers.

The Sensory Center.—Judging from the functions of the mind, we distinguish two separate brain centers: The first is the sensory intellectual center, which runs from the sense organ, the retina of the eye, the inner ear, the cuticle, along afferent nerves to the cortex or the surface of the brain. The sense organs thus become the gates to consciousness. At any one moment there are countless stimuli, sounds, lights and shades, colors, odors, vibrations affecting the skin, all knocking at these portals, seeking admission; but only those that are strongest succeed in gaining recognition. This sensory

intellect gives the individual his knowledge of the world without, of the environment in which he lives. The vibrations and stimulations that impinge themselves upon us have meaning for us only as they are interpreted by this sensory intellectual center. It is, therefore, that mental function which makes mankind conscious, thinking beings.

The Motor Center.—But merely possessing the power of thinking is not enough. Mere perception of good and just, or bad and unjust, is far from sufficient. Action must follow. This is accomplished by a second center, the motor center of the brain. Through its direction stimuli which are brought into the brain are changed into impulses and are sent from the cortex or surface of the brain along efferent nerves to their respective muscles. Desired ends are thus achieved. This second center makes man an acting as well as a thinking being, and thus his active adjustment to the environment becomes possible.

The Functions of the Two Centers Constitute the Function of Mind.—It is seen that one center receives all the sensations from without and interprets them, so that the world in which we are placed has meaning for us; the second directs the movements that follow our ideas. A complete education is not content with training the sensory center, the interpreting faculties, but seeks to develop the will as well, for only then can the individual become self-directing. A mere thought is useless. If all our thinking ended in the mind, and did not become action, mental life would be sterile. A thought that remains in the mind is absolutely without social importance. When the thought leads to action, then it becomes social and has social significance. Thoughts which do not result in some form of action, of physical expression, of social communication, represent mentality socially wasted. A brilliant thought uncommunicated has never yet enriched society, a good impulse unexpressed has never yet cheered the despondent, an inventive idea unapplied has never harnessed nature's forces, an ideal in the realm of day dreams unrealized has never lifted human life and destiny upward,

an inspiration unsung has never liberated mankind from the shackles of the commonplace and the ordinary.

Danger in the Traditional One-sided Sensory Education.—Thought for thought's sake is a vanity as empty as it is pompous and useless to mankind. Thought must pass over from the sensory intellectual center to the motor intellectual center, for our psychology teaches that, unless thought and deed are thoroughly interrelated, the individual cannot fulfill his destiny or be thoroughly responsible. The person who thinks good thoughts, but never acts a good act, is a well-intentioned Hamlet. An idea without a motor side is useless. On the other hand, those whose actions precede their ideas are the "fools who rush in where angels fear to tread." The well-balanced, safe person is he who has the best equilibrium established between thought and deed, whose motor and sensory centers act in unison and perfect harmony.

Dean Balliet complains that the elementary school over-emphasizes the intellect and neglects the active side of life. He says: "Much of our present school work divorces knowing from doing, and often exaggerates the relative value of the former when compared with the latter. Examinations test knowing more than doing, and often degrees are conferred for attainment in knowing rather than doing. This is unfortunate. The legitimate end of knowing is doing." The two centers, sensory and motor, thought and action, must be so adjusted that the former flows into the latter. We must remember that, when the action has no direct nor intimate connection with thought, irresponsibility is developed to such an extent that we class the individual as defective in moral adjustment. The training for such children must be manual; we must appeal to them through action, through the hand. Those who have had experience in teaching and training the so-called incorrigible child can testify to the efficient results obtained by teaching them "doing" rather than "knowing." The keynote in this whole training is that we are attempting to establish such a coördination between thought and action that control is developed. In a sense,

then, education is a training which seeks to transform sensory stimuli into motor impulses. If this transfer is made easy and habitual, the body becomes the perfect tool of the mind, and action becomes the safe sequence of maturely deliberated thought.

Manual Training a Motor Education.—The modern educator and the psychologist go a step further and insist that these two centers are so completely interrelated that every idea has two elements, a thought element and an action element. No idea is complete without either. This may be granted now, for this question will recur in a later connection. Of these two elements, thought and action, the latter is evidently the stronger in the child of six or seven. The savage, who is the child in society, also shows that, in the immature mind, the tendency to action is the predominating impulse. We were all acting beings long before thinking beings. All experimental investigation bears out the contention that the first part of the brain to begin functioning is the motor area; that, unless we exercise it and develop it, the higher centers that control thought will be partially impaired and show stunted growth; that, upon the development of the motor area depends the development of the intellectual centers.

Motor Education Must Initiate the Child Into School Work.

—It necessarily follows that early education should be physical, that the first year of the school should be all manual, all activity. One would, therefore, a priori, prescribe clay-modeling, pottery, woodwork, paper cutting and folding, sewing, drawing, recitations and their dramatization, singing, and the like. But, in their stead, our educational systems place the child in a stationary seat and begin number work, reading, spelling, recognition of written words, letters or figures—work which is primarily mental rather than motor. The child is not interested in the spelling of *tent*, *ox*, *arrow*, their uses fascinate him. To meet this natural instinctive love for activity, modern educators have organized an early curriculum which seeks to take the child through his ancestral life and

teach him the development of the race. The first year deals with the hunting and fishing stage of primitive life. The Indian's social life is taken up and reconstructed in all its details from the story of Hiawatha. The tent, the fire made by friction, the cave, the pond, the crude pottery, the dress, the weapon, all these are learned and studied, not in spelling or reading, but through actual creation. The sandhill affords an excellent opportunity to lay out a community of tents, a pond, a spring, a forest, a mountain, or a valley. The boys build the stakes of the tent with twigs, the girls cut the cloth to make a covering. In the clay-modeling class the children make the pots and vessels used by the Indian; in their sewing class the girls imitate the costumes. Training in color perception and design is afforded by having children select proper colored ribbons and imitate the original form of design. Weaving is taught as the children make crude rugs, baskets, and Indian carriages. Drawing, too, is taught in a most natural way. The children draw, in the same spirit, those things that they have created. They give the freest expressions to their thoughts. All the work of the first year is designed to utilize this natural instinct for activity, to strengthen the motor area that is weak and needs development. Since we work along lines indicated by the children's instincts and mentality, the work is interesting to them, attractive to the point of fascination.

Early Manual Work Must Not Exalt Technique.—How intelligent does this kind of manual training appear when compared with the prevailing stupid, formal lessons of making little articles of folded paper, which are too simple and which the child does not want. Children fold paper into chairs, tables, boats, etc., but they no more look like boats, chairs, and tables than houses or birds. They call them chairs and tables because the teacher announces the title. How stupid to find children in a first-year class in cord and raffia work engaged in exercises which illustrate one principle or another. The manual training syllabus of one of our large city systems presents the work in 1A as "exercises in knotting, single, dou-

ble, and triple knots, and the chain stitch." No child cares about the kind of knots or stitches; he is interested in making an article that he needs. When the child is interested in the creation, in the result, we show him the principle. Thus the 1A drawing tells the teacher to be sure to pay attention to "mass, proportion, placing, and direction of line." The first-year pupil takes keen delight in drawing a picture that is free and easy, with no rules of "mass, proportion, and placing." Drawing should allow the child to give his freest expression. Let him draw pictures of objects, of people; the result, however crude and ludicrous, is an expression of his ideas. How absurd to find children in low classes drawing a sheet full of lines, in their endeavor to get proper shade and direction. What do they care for these? A sewing syllabus should not introduce the subject with exercises in elementary stitches. When the child is most anxious to achieve a result it should not be required to sew together bits of cloth in order to learn the kinds of stitches and the elementary technique.

All these exercises are dead. The child does not want the technique, for he is interested in the actual creation, the result, the accomplishment of something socially necessary. The curriculum must teach, first, the creation of objects, then the principles underlying them. Let the child draw something that he wishes to express, then show him that his proportions and his line are bad. Let the little girl begin sewing by making something she needs, then teach the necessary stitches in the course of actual creation. Let the child begin his cord and raffia work by making a napkin ring, or a picture frame; then, in the course of the construction of the article, teach the principles of knotting, weaving, etc. It is the outcome that the child wants; the process, at best, is a necessary evil. Every shop-work teacher knows that the children care far less for the early exercises and far more for the later work in constructing articles whose use is apparent to them. .

Manual training often fails in the elementary school because it begins by emphasizing technique, the abstract principle rather than the concrete result. It fails to embody the

principle laid down in our first chapter, viz., the elementary school must reflect social use, social need; otherwise its work is meaningless and futile.

Summary.—Manual education, then, seeks to give motor training, to make all thoughts work themselves out in proper action, to emphasize “doing” and accomplishment as well as knowing. It seeks to give finely responsive muscles and to develop a better control over them, not only through exercise, as in gymnastics, but also through intelligent purposeful use, the creation of something that the individual wants. It seeks to establish a perfect coördination between brain and body, mind and muscle, so that any idea that we have can be appropriately executed. The child conceives a pencil box, its size, shape, partitions, and little conveniences within. His sensory center is well developed. But when he tries to execute he fails. The reason is obvious: his motor center is poor; the muscles do not obey his commands; there is no coördination between conceiving and creating. To quote President Butler, “Manual training is mental training through the hand.” The words of Tyler’s “Growth and Education” seem very appropriate in our summary of the psychological aspect of the manual arts in education. “Manual training is mental training. In the skill of the artisan’s hand, in the methodical, accurate movement of the mechanic’s arm, in the accurate observation of the eye and ear, you train the mind. Never admit that manual training is anything distinguished from or in opposition to mental training.”

II. Sociological Justification

Education Changes with Society.—Our introductory study showed us that education must constantly adjust itself to new conditions. An education which neglects the needs of a new age is static and worthless. It seeks to adjust the individual to a life that was, to make him retrace the steps of his predecessors. Civilization has just begun a new epoch in its progress, an age of industrialism. What does that mean for edu-

cation? A retrospective view of the history of mankind shows that the seat of manufacture was in the home. Spinning, weaving, nail-hammering, candle-making were domestic industries in which everybody in the household shared. The implements were simple and the processes all hand processes. But soon there came a great influx of machinery in one short decade, and with it the application of water, and later steam power. Machinery had to be collected under one roof, the place of manufacture had to be located where water power was convenient, or where there were facilities for transportation, for the bringing of coal, and the carting away of finished products. Hence, those localities which were naturally favored with water power and which were readily accessible were made the centers for these new factories with their machinery. Industry had now left the home and had come to the industrial centers, the towns. Those who wanted work had to leave their old homes and come to establish new ones in the industrial towns.

The Great Social Changes in Modern Industrial Society.—One of the most important results for education which followed the inauguration of this period of industrialism is the world-wide city movement. It is calculated that, within a very short period, about seventy-five per cent. of our population will be found in the cities. Education must move with population. It must change its character, just as the character of our lives has changed in shifting from the natural center, the country, to the artificial center, the city. If the individual has suffered any losses in the shift, education must make up this deficit. What can these losses be? A brief survey shows us that they are three:

1. The city child has lost an opportunity for natural work and play in a healthy environment. Contrast the country and the city child in this respect. The country boy can ride a horse, harness a team; he can use a hammer and a saw, and is familiar with the use of various kinds of woods; he has seen the various vegetables grow from seed to ripening, has aided in plowing, harrowing, planting, hoeing; he can

scale a fence, climb a tree, aim a rifle; he knows the names of a dozen or more trees, birds, flowers; he knows the common animals, their habits, and their haunts. His whole life seems to be motor and outdoor. The city child loses all the benefits of these natural forms of motor training. Education must hence seek to make up this deficiency, to give back to the city child what industrialism has taken from him. It is for this reason that all forms of manual training, woodwork, iron-work, and nature study, with its elementary botany and elementary zoölogy, have been introduced into our present educational system. The girls are given such work as is suitable for them—cooking, housekeeping, sewing, weaving, the domestic arts. Manual training, in all its forms, was therefore added to our present course of study because the environment has changed; education, in its endeavor to be a dynamic and progressive force, has changed to meet life's new needs.

2. The second loss which the city child has sustained by the modern trend of social development is the lack of knowledge of the use of materials. Because of the opportunities for motor work, the country boy knew the use and qualities of wool, of cotton, of hemp, or flax; he knew the different kinds of earths and sands, the common kinds of rocks, the various kinds of wood; he knew which wood to select for a floor, which for a ceiling, what is durable, what perishable; he knew the secrets of nature's gifts.

The city child is thoroughly ignorant of the uses and qualities of the material about him. For this reason recent curricula introduced the "Object Lessons." They were fortunately short-lived in America. The teacher taught all about coal in one lesson, about wood in the next, glass in another, and some other isolated and unrelated topic in the following period. Children were to observe and tell us what they saw; then the teacher told them what they did not see. Each grade usually repeated the work of the last with a killing regularity. There was no system, no order. The curriculum sought to give the child a knowledge of materials in this artificial way. These lessons proved dead and useless. To know

the uses of an object we must use it; mere observation gives a superficial knowledge of sense qualities. The observer sees not only the useful but also the useless ones. The object lessons died a hasty and well-deserved death.

In "School and Society" Dewey shows how the manual training lesson can give a knowledge of materials used, of their advantages and disadvantages. A class of girls of about twelve years of age was engaged in weaving some useful article with threads of wool. Before the work was begun the teacher called attention to the fact that heretofore the threads were of cotton. The two materials, cotton and wool, were compared. The observations were directed by a few questions, and the children noted that (i) cotton is grown in small threads, while wool comes in long ones; (ii) cotton is smooth and therefore does not adhere, while wool is rough and its threads cling easily; (iii) cotton is difficult to extract from the pod by hand, while wool is combed easily without mechanical contrivances. The pupils concluded that our ancestors wore wool rather than cotton, but the inventions of the cotton gin and machinery for the manufacture of cotton goods overcame these natural difficulties. Here we have a manual training lesson giving food for thought. The children had an intelligent idea of the relative merits of the two materials because they were using them. No object lesson can bring out these qualities so naturally and so vividly.

3. The third great loss which the city child must bear is lack of a variety of work after the elementary school period. The country boy who must leave study at the end of the elementary school finds some form of employment that offers variety,—farming, store-tending, lumbering, teaming. The organization of rural industry is not intricate and involved, and its division of labor is not minute. The work offers plenty of change. The average city child, on the other hand, who leaves school must go either into an office or a factory.

The Significance of These Changes for Education.—In the regular routine of office work the child finds himself engaged either in general messenger service or in some form of special-

ized clerical labors at a low wage for a number of years. As he becomes older his salary becomes insufficient, and, unless he has learned a special line of industry, he goes out looking for something. What is he especially suited for? He looks for everything and finds nothing. He has no trade and shifts from job to job. Manual labor he regards beneath the false dignity which comes so often with clerical labors. What is he? What is he fit for? Has education adjusted him to his environment?

Too often the lad finds the factory waiting for him. Our whole modern factory organization is based on minute division of labor. The greater the number of processes in the manufacture of an article the more mechanical does it become. A shoe passes through seventy or even one hundred thirty separate processes, seventy or one hundred thirty pairs of hands are necessary, but in each case the individual merely brings the shoe to the machine. The individual does not reason, nor judge, nor use skill, nor impress his personality on the article. He feeds the machine and removes the product. His actions are constant duplications; they become lifeless and mechanical. This automatic machine-tending stultifies the body and stupefies the mind. This machine worker soon becomes as stupid as the machine which he is tending. Day in, day out, the same dead, dull, grinding monotony drags the individual down to the level of the iron monster.


Our untrained boys and girls who are annually belched out by the school into society enter industrial life at "its most painful point, where the trades are already so overcrowded and subdivided that there remains in them very little education for the worker." Each craft is no longer a "mysterie"; learning its processes and secrets is no longer a means to an acquisition of skill and dexterity, the artisan's greatest assets, which foster the dignity and the independence of the true worker.

What is the bearing of all this on education? The reader may have already anticipated. The school must save the child from the predicament of the office and from the soul-

crushing grasp of the modern highly specialized factory. Ninety-five per cent. of the school children of our great country never reach the high school. An elementary education is all they receive. It is evident that manual education must go one step further and give each child of this ninety-five per cent. a specific vocation by means of which he can earn his living. If ninety-five per cent. of our children must lead business or manual lives, is it not fair to demand that thirty per cent. of the time of their education be devoted to vocational training?

In the middle of the school course the child should be introduced to the work of the carpenter, the smith, the book-binder, the leather worker, or the wood carver, one of a host of useful occupations. This information can be given to the children through talks by the teacher, a systematic series of discourses on occupations, illustrated by stereopticon views, through visits to neighboring shops, reports of personal observations by the children. Aside from its value as a necessary preliminary vocational training, this work has its educative worth in presenting a series of pictures of human life in the various vocational pursuits. In the latter part of his education the child should be allowed to specialize and become proficient in the elements of one of these. These crafts are higher than mere machine-tending. They demand skill, mastery of muscle, judgment, new adjustments. They are the just and the necessary heritage of our boys and girls.

Teachers in even our large city schools who have under their charge girls beginning the seventh year of elementary education know definitely that many of their pupils must enter the industrial world as soon as they graduate. The children can give the teacher this information, their parents will bear them out. What do we give these girls to prepare them for the inevitable struggle? In arithmetic we treat them to the doubtful mental delights of mensuration, including areas of parallelograms, circles, surfaces of cylinders and cones, of square root, of stocks and bonds, of elementary algebra and inventional geometry. In grammar we cover a course of



study which presents a scientific organization of the subject, half of which we cannot apply for them. Thus we go on, led by the educational will-o'-the-wisp, "culture," comfortably oblivious of its true intent and content. What a blessing education would be, if only fifty per cent. of these two years were devoted to this illusive "culture" and the rest of the time to acquiring a mastery of the elements of millinery, dressmaking, household economy, stenography and typewriting, bookkeeping, or any one of a host of occupations that would enable the child to find its niche in the industrial world in which it must live.

SUGGESTED READING

(List Given at the End of the Topic, Chapter IV.)

CHAPTER IV

MANUAL TRAINING AND VOCATIONAL EDUCATION (*Concluded*)

III. Economic Justification

The business man has never shown so much interest in any educational problem as in the movement for advanced manual training and systematic industrial education. Labor unions, as well as employers' associations, are championing the cause of industry in education. An inquiry into the cause leads us to consider the economic aspect of the problem.

What Economic Changes Necessitate Vocational Training To-day.—Our modern economic organization has brought with it conditions that make vocational training a necessity not only for our further economic development but also for a greater usefulness and a decreased precariousness in the life of the individual. What are these new conditions?

1. The home has lost the industrial characteristics that were prominent under the domestic system of industry. Whether this means an ultimate gain in the moral and social influence of the home remains to be proven by time. Sociologists and educators feel that the home is thus freed from extraneous work that should not be part of its inherent organization. Theoretically this separation of home from industry should work to the inestimable advantage of the former in giving it a finer and purer morale. But another agent is necessary in our society to supply that industrial training which the home gave in our simpler social and industrial organization.

2. The old guild system, with its apprenticeship, has long

passed out of our social life. Under its organization the youthful aspirant to a trade was compelled to pass a long period as an apprentice in the household of the master workman. He received his industrial equipment during these years. This was followed by a period of journeyman life, of travel from one industrial center to another, during which time the worker plied his craft as an itinerant artisan. This meant varied and useful experience. After the production of a masterful piece of work which successfully passed the scrutiny of the master workmen, came the reward, election into the craft guild. Despite the caste system and other objectionable phases inherent in such an organization, industrial training was nevertheless gained, and industrial efficiency of the worker was usually guaranteed. We have no such educational agency to-day. This training is as essential to-day as it was then. True, it may not be a requisite in the same industries as heretofore, owing to their mechanization through the introduction of machinery, but the training is essential in other industries that have sprung up since.

3. Our modern factory system, with its machine products and minute subdivision of labor, has brought such specialization that the young worker who enters it becomes proficient in only one minor process, is acquainted with only one technical requirement, develops skill in only one part of the craft, and remains ignorant of the trade as a whole. He becomes an appendage of a machine rather than an "all-round" worker. The craft is usually so complex that only those that have received training for it can understand it, can assume the responsibilities of the larger work of supervision and guidance. Where shall this training be obtained? Who other than the community shall give it?

This technical education can be obtained from a number of private concerns to-day which make it a practice to train their own artisans. But there is no reason why the state should wait until personal need moves private individuals to initiate and develop this branch of education. Our cultural education was conducted for ages by private philanthropy or

by the bounty of the church. Throughout the centuries of this private initiative, education never made the strides that it has made during these few decades under state and public guidance. Socialism and its tendencies have proven themselves eminently successful in education and far superior to private effort and control.

4. Revolutionary changes in process and result have not been limited to industrial pursuits. Agriculture is trying hard to keep pace with the progressive movement. The old system of farming is hardly farming when compared with the modern farming, which applies the scientific aids, taking advantage of our knowledge of chemistry of soil, of physics, of our new machinery, and of experiments in the extermination of insects that bring death and devastation to plant life. Where shall the farmers' lads procure this knowledge? How shall they learn the new ways and progressive methods that science and the inventive genius of man are producing? This is one more additional duty that the community must assume in its endeavors to supply industrial needs.

5. Our modern urban life, with its large communities, rich in varied abilities that are concentrated in the city, is responsible for an inevitable keen social competition. City life and city organization demand specialization, expert knowledge of one craft, mastery of one industry. With the numbers of people so large and expert ability so prevalent, only the industrially fittest can survive in our struggle for social existence. Education must become more socialized, more vocationalized, for only then can it hope to give to each individual what he needs most. Our point is brought home by Professor Gillett, who tells us, "To socialize education completely would be to vocationalize it. To vocationalize it would be to reconstruct it to harmonize with the exact constitution of society. But society is an organization of vocational structures. It is highly specialized. Education must then be as specialized as society. It must be vocational because society demands specialized members to serve it faithfully.

Progress in Vocational Education in Foreign Countries.—

It may be an argument lacking in merit to urge vocational training in our democracy because great strides have been made elsewhere. But the position is not so flagrant a non-sequitur if we reflect upon the inestimable advantages that have accrued to those communities that have entered an active campaign based upon a progressive program of vocational training. Let us see what other countries have achieved.

In the days of general praise of American industries and pride in our industrial development, during the St. Louis Exposition, Germany sent a commission of eminent scientists, educators, economists, sociologists and business men to study the American industrial status. While we were lost in the general enthusiasm and wrapped up in our own glory these men scrutinized our whole business organization. Germany wanted to know our true power industrially, how much she was to fear us economically. The commission did its work quietly, but so effectively that it has given us much food for thought, and its reports are responsible, to a great extent, for our national interest in, and clamor for, industrial training. The story of what the commission learned and its conclusions are well told by Person in his "Industrial Education."

The German students found that, while we Americans are progressive and have vast physical resources, Germany need not worry about the United States as a permanent effective competitor. The reason is a "complacent feeling of satisfaction with everything American." The United States is thoroughly content with the national assets that she has. There is no attempt to improve her industrial skill or give systematic industrial education. The United States is relying on her vast resources to keep her in the first rank among the nations. Will our hope be realized?

Germany is constantly striving to turn out most efficient workers. Her trained chemists become the leaders in the chemical world of dyes, mixture of steel, explosives and the like. Her schooled textile workers are the rivals of the time-

honored English weavers. Her clerks and accountants are called to the largest concerns in the United States. Her well-trained mechanics are called to the United States to take responsible supervising positions in American foundries. Her salesmen, schooled in the world's needs and outputs, in modern practices of business, give her a place in every important market in the world. The United States Educational Report for 1903 tells us, "It would be difficult to estimate how many young Germans are managing the correspondence in our large houses" (United States Educational Report, 1903, p. 654). So much do we need industrially trained men that not only are we importing these in great numbers, but private concerns, feeling the need, have themselves undertaken to give a thorough industrial training to apprentices. The Baldwin Locomotive Works, the Lawrence Textile School, the R. H. Hoe Company, of New York City, are examples. These are some of the few oases to which we can point to relieve the monotony of our educational desert in vocational training. How puny do we appear when compared with the nation-wide movement in Germany!

The city of Munich began its system of vocational education in 1900 when it transformed its continuation schools. To-day it boasts of fifty-two separate vocational schools, "Fachschulen." It is a city of only five hundred and eighty thousand people, with a school population of seventy thousand. There are nine thousand boys and seventy-five hundred girls who are taking compulsory vocational work. To these must be added thirty-six hundred girls who are taking voluntary studies in these schools, thus giving a total of twenty thousand pupils. Boys are required to attend the public schools when they are from six to fourteen years of age. If they do not enter the high schools, but plan a business or industrial career, the law compels three years' attendance at the vocational school while practicing the trade in a shop. With girls the compulsory period for elementary school is from six to twelve years of age. Those who are not to continue studying must select their vocation and begin a com-

pulsory educational period in the vocational school. The hours are so arranged that these children can earn a little working at their crafts while studying. This education is absolutely free. The variety of trades offered can be seen from the following partial list: Butcher, baker, shoemaker, barber, woodturner, glazier, gardener, confectioner, wagon-maker, blacksmith, chauffeur, tailor, photographer, decorator, waiter, painter, paper-hanger, bookbinder, potter, jeweler, silversmith, watchmaker, leather-worker, milliner, dressmaker, cook, waitress, nurse, etc., etc., etc.

Saxony, a diminutive state, has one hundred fifteen technical institutes; Baden, with a population of one million six hundred thousand, spends two hundred and eighty thousand dollars annually for technical education; Hesse, with its one million inhabitants, has eighty-three schools for industrial designs, forty-three schools for the manufacturing industries, and some minor provisions. The state of Prussia has in active organization over three thousand industrial, trade, commercial and agricultural schools, which care for two hundred thousand students. The city of Berlin has forty thousand students in "supplementary trade, industrial and commercial schools." These are some of the striking features which the American student of education regards with envious eyes.

England has awakened to the educational need of the century. Professor Gillett, in his "Vocational Education," gives us a résumé of the effective means put into operation in the hope of reclaiming lost industrial prestige and position. Civic Universities have been established in the cities of Birmingham, Manchester, Liverpool, Sheffield and Leeds. These are large technical schools and aim to teach men the application of science to industry. Leeds, the textile center of England, has its Civic University, with a "School of Textile Industries" and a "School of Dyeing and Coloring Chemistry." Only after Germany succeeded in wresting from England the supremacy in the dyeing of fabrics were these two "schools" organized. Sheffield, being the cutlery center

of the Empire, has a "School of Metallurgy" in its Civic University. Each city is therefore trying to give the best possible technical training in its specialty in its endeavor to withstand the telling competition caused by the efficiently trained foreign worker.

In Japan, France, Denmark, Switzerland, Norway, and Sweden the same movement has already begun, and is being pushed with vigor and intelligence. The only part of our country that can be put into the same category is the South. Whatever this section has achieved redounds to the everlasting glory of the negro race, which is meeting the problem under the leadership of Booker T. Washington, who sees in vocational training the only practical salvation of his race. Schools like Tuskegee and Hampton have become the models of their kind. There are now seventeen schools in the South supervised by Tuskegee graduates, each having not less than sixty students. Of the total number of graduates from these technical institutes, less than ten per cent. are failures in their trades. Farming among the negroes is never so remunerative as when the technical school graduate returns to the farm or goes about giving his fellow-men the benefits he has acquired. What these schools have meant for the social amelioration of the negro will be shown later. The negro is beginning to realize that in our age of industrialism, social salvation may be attained only through economic progress and independence.

Industrial vs. Vocational Training.—Before proceeding with the discussion, it would be well to stop a moment to differentiate industrial from vocational training and consider the true province and endeavor of each. It must be noted that these two forms of education are not synonymous. Industrial training seeks to prepare for the industrial and mechanical pursuits and vocations in life. Vocational training is far more inclusive, seeking to incorporate every necessary phase of social activity. Only a small fraction of our population is industrial. Hence education must not only be industrialized, it must be vocationalized as well.

Forms of Vocational Training.—What forms shall vocational training take in order to fulfill the characteristics emphasized in this distinction? In the main, it includes five lines of endeavor, viz.: (1) Professional activities, which need no further discussion. (2) Commercial pursuits, which include the trained salesmen, advertisers, buyers, business managers, import and export clerks, accountants, bookkeepers, stenographers and typewriters, and general office assistants. (3) Agricultural industries, under which we incorporate all forms of farming, fruit growing, lumbering, cattle raising and kindred activities. (4) Industrial crafts, which cover the host of manufacturing and mechanical industries. (5) The household arts, which count among their occupations sewing, cooking, housekeeping, nursing, and the allied domestic processes. A complete vocational program like the one that is in operation in Germany covers them all, for only then can it meet all vocational needs and afford a safe and attractive variety.

Economic Advantages of Vocational Education.—We can do no more than indicate our deficiencies and suggest remedies that should be inaugurated without further delay, for there are economic gains which we can ill afford to lose. Industrial and vocational training on a national scale make for efficient economic organization. Germany and Japan hold leading industrial places among the nations because they are both industrialized and vocationalized. They are fast climbing to the top of the industrial ladder despite the recency of their organization, and the limitations of their physical resources.

Vocational training means industrial efficiency for both employer and employee. Old business organization was simple, the means of communication were limited, transportation was poor, the very processes of industry were exceedingly elementary. The modern business world is a happy contrast with its complexity of organization, its competition, its elaborate means of communication and transportation, all of which have produced world markets to supply world needs.

This development needs trained workers, specialized toilers, thinkers highly efficient in their respective fields. This added industrial efficiency brings its reward not only to the employer, but also to the worker, for in its wake comes a higher scale of remuneration. Person in his "Industrial Education" gives a statistical table showing an increase of three hundred per cent. in the wages of the skilled mechanic over his unskilled fellow-worker. The Massachusetts Commission on Industrial and Technical Education reports that boys who enter a shop at fourteen receive a maximum wage of twelve to thirteen dollars per week. But those lads who spend a partial apprenticeship up to eighteen years of age receive an average wage of thirty dollars per week and have prospects of promotion to supervising positions. This increase in wage rate is characteristic not only of mechanical crafts but of financial, commercial, and managerial positions.

In our own country we can show excellent results of agricultural education given in the western colleges and universities. Scientific farming, cattle raising, agricultural chemistry, scientific dairy methods, are studied in special agricultural schools. The farms are producing more, the people are more prosperous, the income from cattle-raising is much higher, the temptation to go to the city and intensify the strife and competition is lessened considerably. The whole community is happier in every respect because industries and the bread and butter activities have found a place in the school. The sad sight of abandoned farms throughout New England and upper New York would occur far less frequently if country boys and those living in small towns had learned how to apply the lessons of modern chemistry, agriculture, and physics to the cultivation of the land. If our scientific knowledge will not make easier and happier our lives, what is its use? Aside from social service knowledge has no reason for existence.

Is There an Economic Danger in Vocational Training?
—Economists and theorists of every school have expressed their doubts of the ultimate efficiency of vocational train-

ing. Their great fear seems to be that skilled industries will be overcrowded. What the final result of a long period of vocational training will be is difficult to decide with any degree of certainty. It is an undisputed fact that the greatest problem of unemployment to-day is the disposition of the vocationless. While there may be an over-supply of general labor to-day, there is a continued and persistent demand for the skilled worker. Vocational training would lessen the ranks of the unskilled worker, and thus equalize labor demand and labor supply. The greatest difficulty which labor agencies and government labor exchanges must face is the problem of the unskilled laborer, not that of the skilled worker.

One may ask: "Is not the tendency of labor toward mechanized and unskilled labor?" This is true in the main. But with conditions as they are to-day, there is plenty of room in the skilled trades. It must not be forgotten that there is a counter movement which has set in as a reaction toward hand crafts. This counter movement will gain in force and in popularity with the advent of a liberal vocational education. Respect for machine products, machine pottery, machine glassware, machine furniture, is continuously growing less. There is an ever-increasing and unmistakable demand for the hand-made commodity which shows artistic design and personal skill, and which reflects the individuality of the worker in his product.

IV. Effect of Vocational Education on the Efficiency of Our Educational System

We measure the efficiency of the school and its educational system by their ultimate and permanent effects upon their charges, by the extent to which they ultimately and permanently influence their pupils, and determine their future welfare. The standard that we use in forming our estimate of the efficiency of an educational institution is its ability to produce responsible individuals who can become independent of the teacher. This is the highest ideal that the teacher can

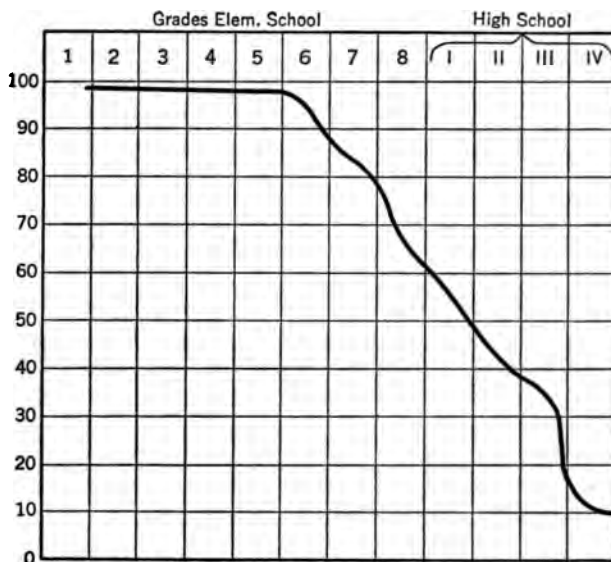
attain in his work. Measured by this educational yardstick, the limitations of our school system become apparent. That it can be rendered far more influential and efficient by the addition of vocational training to its legitimate activities is our thesis. We must now turn to the proof.

The School and the Problem of Social Pathology.—Pathology is that branch of medicine which studies the physical individual whose physiological condition is such as to interfere with the normal, healthy functioning of the organs. It is the study of the diseased individual. The social body is by no means free from social diseases; it, too, is heir to ills and aches, to cankerous growths which gnaw at its vitals and sap its vitality and life. We have problems of social as well as individual pathology.

What are the causes of social pathology, of anti-social individuals who cannot adjust themselves to their social environment, who cannot become desirable, integral parts of the community, who fill the ranks of the paupers and criminals, who are leeches upon the social body? In a brief survey we may trace their social disease to: (1) Reasons of Vicious Heredity, (2) Reasons of Physical and Physiological Defects, and (3) Reasons of Adverse Environment and Limited Education. The first two reasons explain the destiny of one out of ten anti-social individuals; the third is the cause of the unfortunate predicament of the other nine. Although these figures present an ugly truth, it is nevertheless one not devoid of hope, for the environment can be improved and education may be elaborated and liberalized. The incorporation of vocational training into our educational curriculum will do much to alleviate both these conditions, viz., adverse environment and limited education, by (1) reducing elimination from the school, and (2) reducing a prominent cause of crime.

Elimination in the School.—Recent statistical reports are replete with interesting information concerning the large numbers of children who curtail their education long before graduation if they have attained the limit of the compulsory

school attendance age. Commissioner Draper estimates that only two-fifths to one-third of the children who enter the elementary school graduate, and only one-half stay through the fifth or sixth year. Thorndike in his recent investigations puts the number of graduates at one-fifth. Ayres, whose statistical study in "Laggards in Our Schools" insists on greater accuracy, tells us that one-half of the children who enter our city schools usually graduate. Figures vary, therefore, from twenty to almost fifty per cent.; the highest figures, however, are sad enough. Reproducing graphically the facts that Ayres found, we have the following diagram:

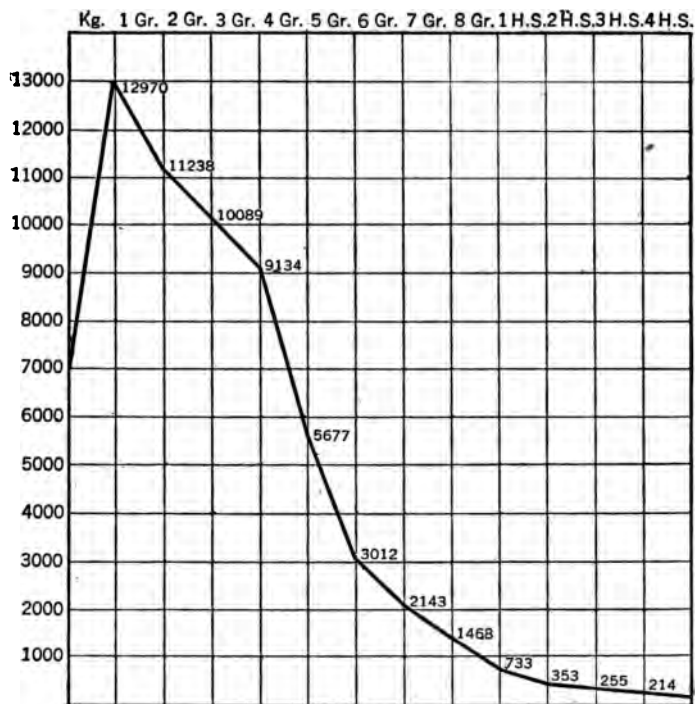


Here we note that only fifty per cent. complete the eighth grade, thirty per cent. drop out in the sixth and the seventh years, only ten per cent. graduate from high schools, despite the fact that almost fifty per cent. begin secondary studies. It is interesting to see that more children drop out in grades six and seven than in the transfer from elementary to high

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school. A continued study of the graph brings new and varied facts depending upon the practical school experience of the reader.

Woodward sums up his studies of elimination in the schools in the following diagram. In it we find represented the schools of the whole country, rural as well as city systems, for the year 1901 (U. S. Ed. Report, p. 1367).



How much more disheartening are these figures, showing a continuous elimination of pupils even before the end of the fifth grade! In the cities there is a fair degree of attendance through the five years because of the greater ease in enforcing the compulsory education law. What a persistent decline

do we see here! With only seven hundred thirty-three out of every twelve thousand nine hundred seventy children entering high school, only five per cent. of the school population of this country are receiving a secondary education! The figures of educational mortality are impressive, indeed, if not thoroughly alarming.

Causes of Elimination.—What are the causes of this elimination in the grades? We may ascribe them, among others, to (1) Retardation. Children are held over in grades; they become too old to feel that there is any possibility of graduating, and leave therefore at the age of fourteen. There are six million children in the United States who are annually retarded or held over. Thirty-three per cent. of our children belong to this grade. New York City spends twelve per cent. of its school appropriation on its repeaters. The additional causes are (2) Incapacity for intellectual work; (3) Poverty; (4) Parents' lack of culture and their low standard of education and living; (5) Lack of interest in school work. Of these five, two interest us most in this connection, viz., "Incapacity for intellectual work" and "Lack of interest in school work"; these must receive our closer attention for remedial measures are possible. Through vocationalized education we can give these children that work which they are capable of performing, and in which they are manifestly interested because they realize its value for their future welfare.

How can Education Counteract these Causes?—Woodward, in speaking of the children eliminated in the grades, tells us: "Their controlling interests are not in committing to memory the printed page; not even the arithmetic serves to reconcile them to school hours and school duties. They long to grasp things with their own hands; they burn to test the strength of materials and the magnitude of forces, to match their cunning and the cunning of nature." The "Outlook" (May 19, 1906), in commenting upon the Massachusetts Report on Technical Education, says: "The salient features of the commission's report are that the first years of employment

of those children who commence work at fourteen or fifteen are often wasted years; that the children leave school because neither they nor their parents see any practical value in remaining there, but that a larger majority of the parents could afford to keep their children in school a year or two longer, and would do so if they had an opportunity of securing a training which would make for industrial efficiency." These are the conclusions of the commission, reached after a personal examination of fifty-five hundred children who left school and were one year at work. The evidence given by the children was verified in a further examination of three thousand parents. We must not conclude that vocational training would be an immediate cure for the great problem of elimination in the grades. It is fair to conclude that it would greatly minimize the problem and reduce the number when we find high school attendances increased by fifty per cent. after its introduction, when we see the improvements that followed immediately after the opening of the industrial and vocational schools in Chicago and Milwaukee and other centers in the Middle West.

Vocational Training and Criminality.—To those who have thought little along sociological lines or who take the old theological conception of innate wickedness, there can be no connection between vocational training and criminality. Nevertheless a moment's examination will show an intimate connection between the two. The individual who has his life work mapped out, who has an asset in life in the form of skill and knowledge of a craft or vocation, who has felt the dignity and the seriousness of life, is on the road to become a desirable and productive member of his community. Sociologists, trained students of criminology and of social relief will readily indorse such a contention. We know that of forty-three hundred forty convicts in the State of Massachusetts at the time of investigation, twenty-nine hundred ninety-one, or sixty-eight per cent., were without any vocation or occupation; of two hundred twenty adult convicts sentenced to hard labor for that year one hundred forty-seven had no

trade. During a recent year, eighty-eight per cent. of the penitentiary convicts of Pennsylvania were never apprenticed to any trade. Gillett, in summarizing Morrison's report on England, tells us that seventy-seven per cent. of the juvenile offenders and seventy-five per cent. of the adult prisoners were without definite vocation. We have the authority of Booker T. Washington for the fact that "ninety per cent. of the colored people in southern prisons are without knowledge of any trade." In the Elmira Reformatory there were sixty-six hundred forty-one indeterminate sentences up to 1895; of these forty-three hundred sixty-nine were paroled. Before parole was granted each prisoner acquired a vocation and was given a definite means of finding himself in the industrial and commercial world. What are the results? Eighty-three per cent. are reported as reformed, leading honest, useful lives, and fifteen and seven-tenths per cent returned to their previous criminal practices. Vocational training is no patent-medicine remedy to cure all social ills, but it has reclaimed eighty-three per cent. of the wayward young men; it is giving each unfortunate an effective weapon with which he can fight the anti-social forces in his environment that tend to drag him down to ruin and desolation. In the light of these figures we may give hearty accord to Carroll D. Wright's words: "Labor properly remunerated is an effective guarantee against the commission of crime. . . . The kind of labor that requires most skill on the part of the workman to perform insures him most perfectly against want and crime, as a rule. . . . It is statistically true that enough knowledge to be of value in increasing the amount and quality of work done, to give character, to some extent at least, to a person's tastes and aspirations, is a better safeguard against the inroads of crime than any code of criminal laws." (Ency. of Social Reform.) Henderson, in his "Dependents, Defectives and Delinquents," is even more emphatic in his conclusion. "One thing shines out clearly from the record thus far studied; that the lack of instruction in manual and trade processes and of personal, moral and

spiritual influences, must be charged with much of the tendency to crime."

Democracy and Vocational Training.—The ultimate hope of democracy lies in education. A consideration of the small numbers whose education extends beyond the elementary stages places this hope and salvation in the public school system. We are constantly confronted with the absolute inequality among mankind; it is necessary that we recognize our helplessness in the face of the inequalities of nature's bounty. Because there is absolutely no equality of abilities, a true democracy seeks to afford an equality of opportunities for each individual to reach out and attain the highest plane within his scope. An ideal democracy strives constantly to give to each the tools of self-help, the means of realizing the highest of human goals, personal independence and self-direction, for only then will each individual stand out in the full glory of his bigness.

V. Ethical Gains Through Manual and Vocational Training

Character Influence of Manual and Vocational Work.—Aside from their psychological, sociological, economic, and educational needs, manual and vocational training have a character influence upon the child. All manual work tends to develop habits of accuracy, neatness, and care. When one is "nearly right" in most intellectual work, a fair result is obtained. The child who is "almost right" in a composition, a history or geography recitation, has done commendable work. No such loose standard can be tolerated in manual work. The parts must fit absolutely, the measurements must be accurate to a fine degree, otherwise the results show imperfections standing out in no mistakable terms. But it must be remembered that accuracy, neatness, and care will usually be exercised by children only when they are working on something they like and whose need they feel. These qualities are cultivated and called forth only when there is a motive for them. The child who is driving nails into a piece of wood

merely to practice the proper method of driving nails, the child who is sewing on a bit of cloth making nothing, merely illustrating technical stitches, usually does not do neat, accurate careful work. What need is there for these qualities? The same child shows infinitely more pains when constructing a dog-house for his pet, or a dress for her doll. A drill lesson in penmanship is usually not an exercise of unusual care. Blots, erasures, unsymmetrical strokes, and other evidences bespeak the carelessness in the drill. The dictation or the ink copy of the composition is usually free from this kind of inaccuracy because it is a real task, not a meaningless drill. We adults are not always neat for the sake of being neat. We show care, accuracy, neatness when we must submit work to others, or when we are making something for ourselves that is to be used by us. Children show this same attitude and are actuated by the same motive in their own work.

Concentration and close application are additional results which manual training will give. Children spend long periods at their manual work, and apply themselves to no small degree when they become absorbed in their tasks. Since this is the work which appeals to them, and which their ultra-active motor centers prompt, they give themselves up willingly, and learn to concentrate until all obstacles are overcome and they triumph in actual execution.

Self-confidence is another inestimable character result of this work. This feeling of self-reliance which is thus fostered is constantly seen in the desire children show to work things out for themselves; they resent any interference or offer of help. It is a wholesome desire which is responsible for bigger endeavors and greater accomplishments in the future.

Mutual help is an absolute essential in manual work. In no lesson is mutual help so needed, so readily given, so often sought and so possible in the school. A child is constantly seeking its neighbor's opinion on various points connected with the work and its accompanying difficulties. "Is the line straight?" "Is the fit good?" "Will he help hold the wood as he fastens it?" "Will his neighbor allow him to use his or her

knife, scissors, tools?"—these are a few of a host of necessary requests. No good manual-training lesson can be given without permission to talk; no school shop should have such discipline as will make the giving of mutual help and suggestions impossible.

A lofty character result of manual training and vocational education is the inculcation of respect for labor. We may talk, explain, and praise manual labor, tell how Moses was a shepherd, the Prophets each worked at a trade, Jesus was the son of a carpenter, and St. Paul a tent maker, but there is only one effective means of bringing home to a child that hand labor is as worthy and dignified as mental work,—let teacher and child spend a period or two a day in the shop working together with sleeves rolled up and arms bared. Nothing convinces the child so quickly and so positively as action. Manual training can be made a true bond of feeling between children of various classes, of different sympathies and outlooks. It can be made the most efficient force for inculcating in children a spirit of democracy, which in the final analysis of ultimate results is one of the basic justifications of our school system. It is the means which makes the son of the rich man work side by side with the son of the poor man, which teaches simply, honestly, convincingly the respect due labor, the true dignity which must crown manual toil. But the hope of Felix Adler, "The two classes of society, united at the root, will never therefore grow asunder"—though noble indeed, seems far too ambitious a result to be achieved by manual education.

Another very notable ethical gain that can be achieved through a vigorous prosecution of the manual training curriculum is the inculcation of a property sense. The proprietary feeling, the right to property, the security of ownership of what is truly and honestly one's own,—these are at the basis of our social organization; they have called into existence our laws, government, and machinery of social control. The child who has produced something by giving to it his skill, his personality, his patience, and his time taken

from play, feels that the object created is in every sense his own. Only those who experience an honest sense of ownership can really feel the necessary respect for the property of others. The child is too often a one-sided communist, "what is yours is mine, what is mine is mine," is his philosophy of property. This property sense is therefore an essential and a vital element in the moral equipment that we must give our children.

Caution in Character Value of Manual Training.—But we must not go too far. Manual training has its advantages and is an educational need to-day. With all due deference to its influence, manual training has its limitations. Many modern enthusiasts hold that manual training is an effective means of inculcating virtue and social morality. It teaches the child concretely the need of truth and precision, for the child sees that unless the wood is cut to an exact measure, unless the cloth or other working materials are faithfully matched and sized, the result will not be right; the fit will be wrong, the various parts will be out of gear. The child learns definitely the demand for exactness in the physical world. This conception the child carries over to his relations in the social world, realizing the need for truth and the utter danger in falsehood and deception, which are forms of inaccuracy, intentional or otherwise. Let us quote from Felix Adler: "It is true, there are influences in manual training favorable to a virtuous disposition. Squareness in things is not without its relation to squareness in action and in thinking. A child that has learned to be exact, that is, truthful, in his work, will be predisposed to be scrupulous and truthful in his speech, in his thought, in his action." Our only answer is: "What does experience say?" We know full well that truth and exactness vary with the content, hence truth in manual work is not truth in social action. Accuracy in manual work is no guarantee of accuracy in social relations. It is the exaggeration of the importance of any one idea that has made the educator an unconscious source of humor and has tended to discredit his position in practical matters. Manual training is impor-

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tant and potent in its educational influences, but it is not the center of the educational firmament, nor will it usher in a new moral era.

SUGGESTED READING

DEWEY. *School and Society*, Chaps. 1 and 2.

DOPP. *Place of Industries in Education*.

THORNDIKE. *Principles of Teaching*, Chap. 4.

CARLTON. *Education and Industrial Evolution*.

DEAN. *The Worker and the State*.

GILLETT. *Vocational Education*.

HANUS. *Beginnings in Industrial Education*, Chaps. 1, 2, 3, 4 and 5.

KERSCHENSTÄINER. *Report on Schools of Munich*.

PERSON. *Industrial Education*.

CHAPTER V

PHYSICAL EDUCATION THROUGH PLAY, GYMNASTICS, AND ATHLETICS

The general topic under consideration is the means of physiological development that will aid in the adjustment to the physical environment. Thus far we have concentrated on manual training and vocational education. We come now to more direct physical education through (1) Play, (2) Gymnastics, and (3) Athletics. Let us see how we make the transition.

Our muscles can be grouped under two heads. The first group contains the *peripheral muscles*, which are found about the sense organs, and in the fingers; they are the smaller muscles that guide in all skilful activities. These peripheral muscles are controlled by the cerebrum, the brain proper. Manual training seeks to develop these. The second group of muscles is the *fundamentals*. They are the large muscles that are used in free movements like walking, running, pulling, and lifting. Their control is usually placed in the lower brain centers, especially the spinal cord. Play, Gymnastics, and Athletics are designed to develop them. Manual training cannot, therefore, be given without fatiguing the brain as well as the body and the muscles. Play, Gymnastics, and Athletics relieve the brain of most of its intense activity and control; they attempt a more definite form of physical development. Our next topic is hence the first of the three means of physiological development, Play.

General Facts Concerning Growth of Children.—All bodily growth is an increase in size due to either of two causes, to an increase in the number of cells or to an increase in the

size of the cells. After birth an increase in the number of cells is rare, hence the growth of children is due to the increase in the size of the cells. An adult has the same number of cells as an infant; the difference lies in their size and energy. To make a cell grow three conditions are essential, viz., (1) rational exercise, use, purposeful function; (2) nutrition, proper food; (3) air. Education in devoting itself to the physical welfare of the individual seeks to give two of these conditions—exercise and proper air.

But each body and each organ have definitely fixed limits to which they can attain in their growth. Great care must be taken to recognize that the limit of growth has been reached, for further exercise which seeks a development that transcends this natural limit may prove injurious. At no time must we over-emphasize the physical training of the growing child, for its temporary limit may be reached. To forge ahead of nature works irreparable injury to the individual. Too rapid growth is almost as sure a sign of poor health as slow and retarded development. Premature development is a sign of weakness, "whereas slow maturing is usually a sign of superior mentality," and power, gradually gaining the force and the momentum of a strong mind.

The general law which we must posit for physical development is that as powers and organs begin to make manifest their growth and activity, proper exercises must be assigned to utilize them. Just as soon as the child shows that he has a new faculty, proper provision must be made to exercise it; otherwise it will not develop, but will become stunted and dwarfed through neglect. Nature, then, determines the order of exercise. Since the child is first merely concentrated activity, anxiously craving to express itself, to do something, the earliest physical training takes the form of free play. As the nerve centers and muscles become stronger, and give the individual better control of his body, gymnastics is added. When a fair degree of strength has been developed, athletics supplements mere gymnastic movement and serves to add new interest and zeal to bodily training. Hence we begin with

play, the first member in this trio of means for physiological development.

Play

Nature of Play.—Play is defined as a spontaneous physical expression of the individuality. Its true nature and purpose we can understand best if we see first what play is not. Since its direct opposite is work, let us place work and play in contrast to see the true nature of each:

Play

1. An activity whose direct result is of little consequence. What the child creates in his game is as valueless to him as to others.

2. The activity itself gives us pleasure.

3. It is freely chosen for its own sake. It is therefore spontaneous.

4. It exercises no definite part or parts of the body. It seeks change and variety in activity.

5. It uses only that energy which is given off freely; it stops when the body shows signs of fatigue or the mind experiences diminished pleasure.

Work

1. An activity in which the result is useful either to the individual or to society. Work is therefore serious.

2. Pleasure is found in the end, the result of work, but seldom, if ever, in the process.

3. Work is always carefully chosen, for the specific end in view must be achieved. It is therefore deliberative rather than spontaneous.

4. It exercises a few definite parts of the body. It usually entails repetition of an activity and lacks the variety and life of play.

5. It demands all available energy, because we usually cannot stop at signs of exhaustion, but must continue beyond the point where there can no longer be any possible pleasure in the activity.

Conclusion.—Play is therefore a natural spontaneous activity, while work is forced. Play means pleasure, although it

may demand a greater amount of physical exertion and strenuousness. The problem for the elementary school is therefore to inculcate the spirit of play in the regular course of work. In their play children carry heavy stones, pile up snow walls until their hands freeze, dig and shovel sand until their palms are calloused. Yet they do not consider these activities arduous work, but play. This attitude is determined by the fact that they see reason and purpose in their activity. School work cannot and should not become play, but some of the spontaneity and pleasure of play can be infused into the serious class work by making it as natural and necessary as play. A good illustration of this suggestion is embodied in the following class-room observation. A teacher of a special "working paper" class could not arouse an interest in local geography. The children found the task of learning streets, ferries, railroad terminals, arduous and dull. The teacher then made several of the children come into the room and apply for the position of errand boy. The teacher impersonated the employer, the child the applicant. Said the employer to the boy, after he had asked preliminary questions of name, age, etc.: "If I sent you to Duane Street, and then to Cortlandt Street, how many carfares would you need?" The applicant said three, and when asked why, showed that he did not know the location of the streets. "Won't do," was the verdict, and a second applicant, who knew these streets, was accepted. The children then realized that knowing streets and locations is essential. The teacher had no difficulty in getting these children to spend Saturday and Sunday in filling in on an outline map the names of the streets they visited. The lesson was now a source of "fun," because they saw the need of this knowledge, and set at the work with unusual avidity. Local geography taught from blackboard outlines and note-book summaries, lacks the life and the spirit of such a lesson. These children were learning their home geography in the right way, and therefore enjoyed the process. It is an illustration of what we mean by introducing the play element into work, without turning the school

studies into play. Having seen the negative aspect of play, we must now turn to its positive nature.

Play as an Intellectual Influence.—The older educators saw in play only what we have seen in it thus far, a free, spontaneous activity which is, par excellence, a means of giving mental rest and recreation. Aside from this function, the old idea held that play had no intellectual use. To-day we see play in a wider sphere of educational influence. Froebel was the first educator to successfully refute the old conception of play, and show that the activity drained off in play can be directed so that the results are educationally useful. To utilize the activity of the child he organized the kindergarten, with its work in elementary sense training. By playing with various blocks, paper, ribbons, beads, and the other kindergarten “gifts,” the child acquires the elementary color, form, and size perceptions. Through play the child mind receives its first training in elementary mental activities and learns to know the essentials of the concrete world about him. All play, furthermore, necessitates the use of imagination, “the make-believe” activity; all play relies upon memory of the sequence of events in the game. Play, therefore, becomes a means of training in perception, of exercising the imagination and retentive powers. Play, then, is an intellectual as well as a physical force in education.

Play as a Socializing Influence.—Play has an added educational value because it tends to develop the social nature of the egotistic child. Play loses its zest and pleasure when the child must play alone. Its real spirit comes from competition and intercourse with others. But unless the child is willing to curb his own personality, to subordinate his own selfish desires, he cannot play with others. The child of four or five is extremely individualistic; he must be the moving spirit, he therefore resents interference of any kind in his game; hence the very young child usually plays alone with his toys. The early games of children are therefore “unorganized, non-competitive and non-coöperative.” The child of eight or ten is more often found in games with others, he submits to simple

rules, and lives up to them as well as he can, in order that he may enjoy the society of his playmates.

The child of thirteen or fourteen has learned the meaning and function of laws in games, and willingly yields to them. Games of boys and girls of this age are positively complex with varied regulations. Such children are usually intolerant of one who deviates from the prescribed path. This is the period of team-playing, in which children sacrifice themselves and their glory for the benefit of the group. The individuating nature is now under control.

The play of pre-adolescents does more than merely develop their social nature; it teaches obedience to sanctioned authority; it gives rise to the social life of the gang. Once a child has established his leadership obedience is easily secured from the others. Children will often do gladly for their leader what they would consider irksome if demanded by teacher or parent. They strive to ingratiate themselves in his esteem. Gang life and game groups abound with illustrations of sacrifices that children make in their endeavor to show obedience and even submission to the leader.

This is therefore a period when we have the best opportunity of bringing home the meaning and importance of law, of living up to the social standard, if we mean to safeguard our own rights and not trespass on those of others. In the class-room we talk of these things in ethics lessons, in history, in literature, in discipline; but in the end the impression is vague, for this verbal appeal, however vivid, is in the final analysis an abstraction. In play the need of obedience to law is very concrete; disobedience and disregard of law show their effects in a way that the child not only understands, but also remembers, for the lessons are brought home to him in unmistakable terms.

Play is therefore a means of giving mental rest and recreation, a force which has a distinct educational bearing both in its effects upon the intellect and upon the will; it is an activity which develops the social nature of the child.

Origin of Play Instinct.—Since this play instinct is so universal and has so significant a bearing on our educational problem, it may be well to inquire into its origin. No two educators agree in their conceptions, yet each urges his as the only true explanation of the cause. The first serious explanation was given by Spencer. His explanation is called the Surplus Energy Theory. He held that the child is a mass of activity and impulse which needs constant draining. The body in its normal condition produces more energy than it needs. All the organs creating vitality, heart, lung, digestive apparatus, have a large margin for safety, a surplus of energy to expend. It is estimated that at times the energy is ten times the amount necessary to be expended. "The blood must be oxygenated in order to reduce man below the peril of excessive, explosive, ecstatic, hysterical vigor." To use up this surplus energy we play. "We play lest we rack to pieces, burn up with too much energy. We play in order to get tired." This theory explains why children play more than older folks, and why the games of the former are more physical than those of the latter. But at best it regards play as a negative or secondary force.

A second explanation of the origin of the play impulse is called the Preparatory Theory of Groos. This German thinker believes that every form of play is suggestive of the instincts of the race, and seeks to prepare the individual for the life that he is to lead. The animal in its playfulness goes through activities which form part of its later serious life. The kitten crouching before the rolling spool, the pup jumping at a stranger in its eagerness to receive some attention, the lion cub playfully pretending ferocity toward its little brother cub, all these are merely practicing in play, activities and reactions in which they must become proficient during later life. Thus the boy in his games plays such things as require hunting, attacking, defending; he drives a team, plays at soldier, fireman or policeman. The girl with her doll plays at being mother, school teacher or nurse. Play thus becomes a preparation for the life we are to lead in mature years.

To quote Kirkpatrick: "Each instinct before it appears is thus developed and perfected by playful activity before it is to be used seriously."

The theory is fanciful and pretty; it is accepted by very many leading educators. But it is nevertheless far-fetched and gives one the feeling of being unreal. If we were to accept this view, and direct the games of our children accordingly, we would rob them of their free spontaneous character and introduce a seriousness which would be fatal. When a boy plays at fireman, at policeman, at soldier, he is merely imitating those about him. Numerous experiments with animals and a detailed study of instincts in the lower forms have recently shown that those activities which we believe to be inborn are acquired through imitation of the parent animal.

A third explanation which is often given is known as the Recreation Theory. This view maintains that play is only the natural reaction to the seriousness and intensity of life. Its sole aim is to give relief, because, Horne explains: "The tightened strings of the instrument must be loosed up." As an offset to this seriousness, and nerve-strung existence, play comes as the alleviator and reliever. But life is not a very serious problem to children, yet they play most. It is exceedingly grave to the adult, but he plays least. Society idlers are hardly leading a life of serious, nervous strain, nevertheless they are constantly seeking diversion. This theory has many grave exceptions which forbid its universal acceptance as an explanation of all forms of play.

Another theory is often advanced to explain play. Its author is Lazarus, the German educator. We must not confuse this explanation with the Recreation Theory, as has been done. Lazarus believes that the mind has a natural aversion for idleness. It hates to be disengaged. When, therefore, man is unoccupied his mind seeks a sham occupation, a make-believe vocation, in order to keep busy. This is play. According to this view play is not explained in terms of recreation, for instead of being a reaction against hard work, it is caused by a lack of it. The child, free from seri-

ous mental occupation, naturally seeks employment through various forms of play. The same circumstance holds true with the social idler. This view of Lazarus emphasizes a primary principle of discipline that all teachers know, but sometimes forget, viz., at all times all children must have definite work assigned, for if we do not keep them busy, they will, in their attempt to keep themselves occupied, often keep us busy.

General Criticism and Conclusion.—All these theories try to explain play in toto. Much of what each says is true, yet no one contains the whole truth. They serve, nevertheless, an important function, for they all point to the need of emphasizing play in the school curriculum and giving it its place in our scheme of physical education. They show us that play is part of childhood itself, the most sacred right of youth.

One of the tragedies of modern city life is therefore the lack of facilities for play. The child in its attempt to give vent to this most urgent and instinctive craving is constantly coming into conflict with authority, and is regarded as an enemy of adult law and order. City life is organized repression of childhood. In this light the playground movement, which is spreading throughout the country, is most necessary and promising for the childhood of our land. The committee on Small Parks in New York, in its report, says: "With a common accord precinct captains attribute the existence of the juvenile rowdyism to the lack of better playgrounds than the streets." The London report reads: "Crime in our large cities is to a great extent simply a question of athletics." A high police official in Philadelphia bears testimony to this fact. He observes: "The great enemy of the police is the boy in his endeavor to satisfy the burning desire for play."

Gymnastics

Its Nature.—The second means of physical education—gymnastics—may be defined as consciously directed physical exercise. From this very formal definition we see that as a means of bodily training it is totally different from play. We can perhaps understand its essential characteristics more

clearly by outlining in greater detail the difference between play and gymnastics.

Play

1. It is a free and spontaneous form of expressing the physical nature.

2. It exercises some parts of the body, but which organs and muscles receive the benefit of this training is wholly a matter of accident.

3. Its aim is relief and recreation.

4. It gives pleasure and therefore requires little or no will power.

Gymnastics

1. As a rule gymnastics is far from spontaneous; it is consciously directed in its whole development.

2. It seeks regular, systematic exercise of the muscles and organs which make for a developed body.

3. It aims to achieve harmonious physical development.

4. It gives little or no pleasure, and, at times, may cause discomfort; it necessitates will power to no inconsiderable degree.

Conclusion for Bodily Development.—From these points of divergence we readily conclude that these two means are diametrically opposite in aim and in spirit. But each of them has its special important endeavor and function, each its separate scope. The conclusion is, therefore, obvious that gymnastics should never supplant play but should be introduced and kept supplementary to it throughout the school course. The need of continuing play far longer in the physical curricula than is done in most courses becomes apparent when we see the limitations of gymnastics in the elementary school.

Misconception of the Function of Gymnastics.—That act which we like to do gives us greater bodily and mental benefit than that which we perform from a sense of duty or coercion. A pleasurable activity may require far more energy and nevertheless be less exhaustive. All agreeable tasks work

along the line of least resistance, the line of greatest attraction and easiest natural activity. Disagreeable acts take the line of greatest resistance, and hence bring fatigue in a comparatively short time. For the elementary class-room purpose, play is better than gymnastics because it gives pleasure and recreation. It brings complete relief from work.

In the gymnastic drill the strain of class-room work is not only continued but often intensified. We demand that all children act in unison, the attention must be keen, the work thoroughly systematic. After an hour and a half or two of class studies, in which the child is suppressed, the natural tendency is to break out, to be free and unfettered. When that time comes we offer the regular set of movements, breathing to counts, stretching upward and sideways, bending trunk, knees, etc., exercises which, in theory, counteract all the injurious defects of posture resulting from the protracted recitation periods. But the spirit of the drill is decidedly opposed to what the child wants and needs. He has been subdued and suppressed; he wants free, spontaneous movements without regard to time, order, sequence. He wants discipline and control removed. He wants freedom and liberty in the fullest sense.

Why Gymnastics Often Fails in Class Room.—The child goes through the drill from a sense of duty. Each action is meaningless. If he does not think, he loses count, he is out of time, and is reprimanded or punished. At the end of a physical training lesson under a strict disciplinarian the child is just as tired mentally, just as strained emotionally, as before it. On resuming work the teacher finds that the ten minutes have not given the relief, the rest, and the recreation that were expected. With a weak disciplinarian this limitation of the gymnastic lesson is not so apparent. The attention and the responses are not accompanied by the same strain, the child has a little liberty and ease, a liberty and ease, however, which are not granted, but taken. Such a period gives the child some relief. The moral is not "Be a weak disciplinarian." It points clearly to the fact that the gymnastic drill

is systematic, regular, and seeks to exercise and develop each part of the body; but it does not give that needed mental rest and relaxation that the child craves. The daily physical exercises must make ample provision for play, and must give to it as much time each day as is given to gymnastics, if not more. Play, by completely relieving the mind, will intensify its activity when class work is resumed. The teacher who has absolute control of her class will find it an interesting comparison to study her class after a regular fifteen-minute calisthenic drill on one day, and after a three or five-minute whispering period on the next, when the children are allowed to walk about the room, talk to friends, stand about, gossip and jest, even as we do. Although the time may be one-third or one-fifth of the calisthenics period, the complete relief will make children more alive as we begin our next study lesson.

What sad and solemn faces we see before us as a class is laboriously going through the gymnastic drills to the teacher's count, under the teacher's surveillance! The various grades have time allotted for these drills, but what provision is made for play? Above the fourth year, when the recess is usually discontinued, a game period is a rarity. We must remember that the few minutes of calisthenics per day will not result in harmonious bodily development. These periods are given in the hope of affording mental relief and rest. But play, in its very nature, rather than gymnastics is designed to do this. The conclusion for the school is obvious: less calisthenics and more play would give better and happier work.

Athletics

Conditions of Modern Athletics.—Our study brings us now to the final means of bodily training, athletics. In the immediate past it has received little scientific attention and study; it was allowed to develop in its own way without control or guidance until it has become the least effective of these three means of physical training, and hardly merits a co-

ordinate place with gymnastics and play. Gymnastics has been studied and systematized. Its development shows order and rationality, beginning with movements and exercises that are simple and elementary, gradually advancing until it includes, in the course of its increasing complexity, the training and strengthening of each of the necessary muscles. But athletics is more or less chaotic. It lacks beginning and end; it has no scientific development. The limitations of athletics are not due to its recency, for it is by no means a modern medium of bodily development. It reached a high state of efficiency in Greece and in Rome. It has attained considerable efficiency, to-day, in many of the older countries. Nor must we assume that it has outlived its usefulness; it has merely degenerated and needs regeneration.

Nature of Athletics.—What is athletics and how does it differ from gymnastics? Athletics has been defined as exercises which show a combination of gymnastic and play elements, indulged in for the purpose of winning, usually for a particular group. Athletics realizes that gymnastic movements are dull and tedious. Because the child sees no object in the various systematized movements in which he is drilled, the spirit of contest, competition, and emulation is introduced. Interest and life are thus infused, for now every movement seems to have a goal—to win for the team or institution.

The difference between gymnastics and athletics is one of spirit. Gymnastics is severe, disciplinary, formal; it seeks only a harmonious development of the body. Athletics, on the contrary, is the fullest expression of the play instinct; it is freer than gymnastics; it invariably gives pleasure and arouses keen delight or bitter disappointment. Athletics revives childish interests with their love of playful competition and rivalry. It makes adults of children; it also makes children of adults by introducing a serious interest in activity that is inconsequential.

Educators rarely discuss athletics with any marked degree of calmness and equilibrium; their views are extreme and

biased; they are the results of bitter prejudice. In recent years a storm of protest has been raised against athletics, its inefficiency and abuses. Athletics is becoming a serious factor in the present school curriculum in physical training. It bids fair to gain in importance in the immediate future. What are the counts in the indictment against athletics? Does it merit the sacrifice of time and energy that teachers are making for it? Certain definite advantages are urged for athletics by its devotees. To these we must now turn.

The Case for Athletics.—The first advantage claimed for athletics is that it develops an institutional spirit. In the athletic contest the standing of the school is threatened. Whatever interest and loyalty the children have for their school are brought out on the athletic field. When our country is in danger, patriotism runs high. In peace, our enthusiasm often subsides, and our loyalty may become dormant. So, too, in the hour of trial, all the love and spirit that the pupils feel for their school will be aroused. Its success or defeat looms up in tremendous proportions to them. They are all united by one common bond; all their interests and desires are merged into one. Athletics helps make a school spirit, helps build up the traditions peculiar to each institution.

That athletics has a wholesome moral influence is urged as a second point in its favor. In no other activity must the individual forget himself so completely as in athletics. Only the athlete knows what self-denial and sacrifice are needed "to make a team." It must also be remembered that athletics is successful only when emphasis is laid on team work rather than individual freedom and personal tactics. The player must feel that the glory of the victory belongs to the team, not to him. He merges his skill and dexterity with those of the other players, for his victory is the school's victory. He suppresses his ego for the common good. Enthusiasts for athletics tell us that this lesson is impressed so deeply that the athlete carries this same spirit of "the com-

mon good" into society. Athletics, like play, socializes the individual.

The plea that athletics gives grace, ease of movement, better control of body and muscle by the mind is too obvious to need elucidation or further comment.

A final important result of athletics is the power of quick decisive action which it cultivates. The various forms of athletic games present numberless situations which are critical in their nature, for they may turn victory into defeat, or vice versa. There is no time for hesitation and deliberation. The problem must be solved instantaneously or not at all. In practical life there are countless similar situations, far more critical and intense in their nature, with greater consequences at stake. Quick decisive action is essential; athletics can bestow this gift.

These are the educational advantages urged with great insistence for athletics. Theoretically they are irrefutable. But when we look closer into athletics and seek practical results we find that not only are these much desired influences absent but that entirely unforeseen evils and demoralizing tendencies have sprung up. Let us turn to the other side of the problem and note the disadvantages.

The Case against Athletics.—It is the common experience of every conscientious teacher that very few of the total number in a school are benefited by athletics. It is likewise true that almost invariably the children who are fairly well grown and have attained sufficient development for their age and size receive the advantages which athletics has to offer. How often are we confronted with the ludicrous sight of the anæmic, pale-faced, hollow-chested student lustily cheering the great, big, overdeveloped, ungainly athlete? Would it not be more sensible to make them change places and give physical training where physical training is necessary? We go to extremes, we produce overdevelopment on the one hand and underdevelopment on the other.

Athletics usually overemphasizes the winning element and thus has a demoralizing influence upon the student-body and

the character of the results in the studies. We saw that "playing to win" was added as an extra element, as a secondary motive, to give life, spirit, and enthusiasm. "Playing to win" becomes the final goal, the ultimate aim of athletics. Conscience and honesty are compromised for every petty advantage. The gambling spirit too often enters into academic athletics. The gambler plays solely for the purpose of winning. The athletic manager forgets all but victory; it is the star to which he hitches his wagon. A superficial study of the methods employed in practical athletics is most discouraging. In our city school systems, where athletics is a much emphasized activity, we find constant charges which impute teachers' honesty, and reflect chicanery and charlatanism of a most astounding nature. Instances of falsifying of records, of sending children to Turkish baths to reduce in weight, of teaching children to take every mean and petty advantage of their opponents are not uncommon. College students whose interests in athletics have brought them into close contact with all the intercollegiate sports can cite examples of dishonesty and knavery which overshadow the indictment against public school athletics. Settlements and institutions for social service are too often as sullied in their athletic records as the colleges and the schools. The survival of the slickest, might makes right, are demoralizing lessons deeply impressed on our children and young men when "playing to win" is the all-pervading aim of athletics.

Another great deficiency in our athletics is the fact that, with victory as the ultimate goal, a wrong physiological basis obtains. Many enthusiasts fail to see that the object of all physical development lies not in the creation of large muscles but in the harmonious development of all parts of the body. The great endeavor in physical training is to profitably utilize our nervous energy, to build up a proper coördination between body and mind, to develop symmetry and regularity, to give to each organ and muscle its proper strength. The Greeks, with their limited knowledge of scientific physiology, had the proper conception,—to develop not brute force,—but

a pleasing harmony of the entire body. Overtraining and overspecialization, so characteristic of our own athletics, are dangerous, for they not only make harmonious development impossible but often work a permanent injury by overstraining the muscles and the heart.

The Remedy.—With such an indictment against athletics, it would perhaps seem logical to conclude that it ought to be eliminated from all educational institutions. But are the advantages which may be reaped from athletics to be lost? Did they not seem real and possible of attainment? Educators and directors of athletics must strive earnestly and persistently to realize and maintain them. At present there seems to be only one radical remedy, viz., the substitution of inter-class athletics for interschool athletics. Every school should have athletic work, but all games should be confined to the classes in the school. Since each class would need a team for each form of athletic contest in which it took part, many more children would be active participants. The temptation for all methods of dubious ethics would come to an end. A school and a class spirit could be aroused as surely as in inter-institutional contests. The moral value and character influence of athletics would be retained. Only then would our fondest hope be realized, and athletics would become a worthy means of bodily development, giving mental training through the muscle.

SUGGESTED READING

- BALDWIN. *Mental Development* (Social and Ethical Interpretation), pp. 136-146.
- DRUMMOND. *Introduction to Child Study*, Chap. 12.
- HALL. *Adolescence*, Chaps. 1 and 3.
- HOENE. *Philosophy of Education*, Chap. 3.
- GROOS. *Die Spiele der Menschen*.
- JOHNSON. *Education by Plays and Games*, Part I, Chaps. 1 and 2.
- KIRKPATRICK. *Fundamentals of Child Study*, Chap. 9.
- TYLER. *Growth and Education*, Chap. 14.
- WALKER. *Discussions in Education*, pp. 259-289.

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PART III
EDUCATION AS SOCIOLOGICAL ADJUSTMENT

CHAPTER VI

THE CHILD AND THE CURRICULUM

The message which life and evolution have for education has been interpreted by biology to mean "adjustment to the complete environment." Physiology has reënforced this conception by making it mandatory upon education to provide for the physical needs of the individual because the adjustment process is not possible without a struggle with the physical forces of nature. Society and social organization have a message for education, and a legitimate claim upon it. To these we must now turn.

The Meaning of Environment.—The conclusions of the previous study have led us to accept the statement, "Education is an adjustment to the complete environment." The earlier discussion explained the term "adjustment" more fully, to make sure that adjustment is interpreted to mean, changing the world to fit the individual rather than a remodeling of the individual to harmonize with the impersonal world. We must now turn to the second important term in this definition, viz., environment.

Thus far "environment" has been regarded as synonymous with mere surroundings. This rather narrow conception sufficed in the discussion of the physiological aspect of education. The social view of education demands a deeper and broader interpretation than "mere surroundings"; it must reflect the past as well as look to the immediate physical present.

In the course of social evolution man made himself master of varied experiences. This knowledge he gained at great cost, through the sufferings of ages. Surely the new-born

member in society need not go through all the trials and tribulations of his progenitors in order to acquire this information. The newcomer finds the facts and experiences so gained awaiting him. All the wisdom which the pioneers of civilization gained in their social progress is systematized and made ready for his use. The complete environment for an individual is hence the sum total of all necessary racial experiences. It is this conception of environment that places every child on a relatively higher starting plane than his forefathers. Butler had this social aspect of education in view when he gave the definition referred to in an earlier relation, "Adjustment to the spiritual possessions of the race." Horne goes a step further and declares that education is "the sharing of the race's life."

The old generation is hence the teacher of the new. The sum total of the experience of the race is handed down from generation to generation, but each succeeding heritage is richer than the preceding one. Each generation, then, is the heir of its predecessors' experiences, adds its own to it, and then bequeaths the sum total as a legacy to its successors. Education, therefore, is that social force which preserves the necessary past, conserves and enriches the present, and prepares the way for future progress. Education, by adjusting the pupil to the history and experiences of the race reproduces in his own mind the mind of the race, and thus makes him a rational part of the social body.

What Has the Individual to Offer for This Adjustment?— Thus far the problem has been studied from the social point of view, for the question was, "What has society to offer in this process of adjustment?" The answer is, "The sum total of racial experience." It is now necessary to see what powers and resources the individual possesses by means of which this adjustment can take place and through whose agency he hopes to make himself master of what the race has to offer.

All the spiritual resources and capabilities of the individual are summed up by the term "mind." In reviewing

the evolution of the psychic gifts it was seen that mind functions in three ways,—as a sensibility, striving to make us conscious of the outside world; as an intellect, reading meaning into what is perceived, telling us which goals in the environment to attempt to achieve and which to avoid; as a will, which controls activity and is responsible for the attainment of these chosen ends. The conclusion is therefore that the individual brings to society, or to the school—society's formal adjusting agent—a mind capable of these three modes of functioning: (1) as mere consciousness, (2) as the selective agent, (3) as the directive force in life. These three phases of the mind are not parts of it, as many of the old psychologists seem to indicate; they are functions of the whole mind.

How Can the Individual Share in the Life and Experiences of the Race?—The next logical question that presents itself to the student is, "What means will enable the individual to share in the life of the race?" Obviously through the curriculum.

The three essential factors in the process of present education are: the child; the curriculum or course of study, and the teacher. The curriculum is the medium that brings the teacher and the child into direct communication, and creates a common meeting ground for the mature intellect of the former and the undeveloped mind of the latter. A curriculum is a body of racial experiences, selected out of the life of the race and used as a basis for individual development, for the continuance of social standards and institutions, and for the preservation of knowledge already acquired. From this definition it is evident that the curriculum reflects both the individual and the social phases of life. The social function of education is emphasized by the fact that the curriculum is a part of the mass of the experience through which the race has passed, and aims to continue social standards and ideals. It emphasizes the development of the individual because it seeks to give only such experiences as will minister to his best development. The sound curriculum thus incorporates the individual into society, it brings the one into the many, it seeks

to establish an education in which individual training reflects social progress.

The Child and the Curriculum.—An effective course of study must be so arranged that the stages of the child's development and the intellectual standards of the curriculum will be identical. In other words, a program of education must be so arranged that it always corresponds to characteristics of the various phases of the mental development of the child. Does the average course of study recognize this standard? Dewey, in his "The Child and the Curriculum," points out that there is a wide breach between the child and the curriculum, for, instead of harmony between the two, there is discord. He arranges the divergencies between them under three heads. A summary of this indictment is helpful.

(a) The child lives in a world of actions and things, not of thought, laws, and principles; in a world that is full of concrete objects, not abstractions. His is a life in a narrow environment, bounded only by his past experience and his limited mental faculties. But the curriculum thrusts him into studies that transport him into time and space, into a world of ideas and abstractions. He studies of a solar system, of new continents, of relation of geographic conditions to political and industrial development, of policies of past ages. Surely a slow transition is necessary. Is this transition made correctly? Is it natural and gradual enough? Is reading taught properly by a method that begins by teaching sounds, isolated letters, or words, rather than sentences and ideas? Is it in harmony with the principle elucidated to begin United States history with nine-year-old children by a study of the discovery of America in 1492 and the new route to India, as all school histories do? How can the child find his bearings in these distant topics? How, launching him into the past so suddenly, will he be able to find his cardinal points? We must always begin with our immediate environment.

Before the teacher begins the lesson she must always ask herself, "Where does this topic touch the child?" Having determined that, she must start the lesson at that point, for

this is the "point of contact," the bond of sympathy between the child's interest and the subject-matter. How shall elementary reading, therefore, be introduced? The child knows sentences, for he employs them in the expression of his ideas. The child is hardly ever conscious of words, never of sounds of letters and their names. He always subordinates these to the idea. Hence the child should begin to learn to read by reading sentences and stories. History must have its beginnings in the stories connected with his environment, the places he sees and knows. Whatever excursions are taken with children into the realms of distant time and space must start in the concrete, narrow world which actually touches them. So, too, geography must have its beginnings in local topography, in a study of the physical environment, in the immediate social and industrial conditions.

(b) A second divergence between the child and the curriculum is equally vital. The child's life is thoroughly interconnected. It is a unit. It must be so to him, since his knowledge of the world is dependent upon all that he actually sees. Things are connected and unified in nature. "The things that occupy him are held together by the unity of personal and social interest . . . whatever is uppermost in his mind constitutes for him, for the time being, the whole universe." Does the curriculum unify the universe which the child studies? Too often it operates in a decidedly opposite direction. Geography, history, arithmetic, and the whole series of school subjects, are taught to the child as separate, independent subjects. He finds little or no relation among them. The subject of English is, in turn, broken up into a number of distinct sub-subjects, each taught in its own way, in its separate period, and too often with little or no reference to the others. There is no pedagogical reason for not selecting spelling words from all the expressional exercises, or the sentences for grammatical analysis from difficulties encountered in composition and reading. The memory selections and the topics for many compositions should find their source in related class-room studies. This would give all the English

work its necessary unity. The child is being made to suffer from the lack of unity in experiences that are integral, while education is busying itself explaining and extolling the principle of correlation in class teaching.

We insist on clearness of enunciation in the phonetic drills, but we allow slovenly expression in the language of our geography and history lessons. Clearness of articulation is sacred in the phonic drill only. We insist on accuracy and precision of speech in the composition periods, but we tolerate looseness of expression in arithmetic, permitting our children to explain that, if three-fifths equals \$9.00, one-fifth equals one-third of \$9.00, or \$3.00. Accuracy and precision of speech are no desiderata outside of the composition period. The whole curriculum is presented to the child as a mass of facts, a sum total of straggling bits of information. We fail to bring out the unity of knowledge, its singleness of purpose and aim.

(c) A third discrepancy between the child and the curriculum is found in the fact that, in teaching, subjects are presented in which the facts are carefully classified and arranged in a logical order, according to a scientific principle. But scientific systematization is itself based on a study of underlying similarity or deeper meaning of these data. The child does not see the universe so classified. He sees experiences in their natural order, in their accidental places. Dewey says: "Facts are torn away from their original places in experience and rearranged with reference to some general principle. Classification is not a matter of child experience; things do not come to the individual pigeon-holed." It is in the curriculum that these natural associations are broken and a new grouping, which is scientific or logical, is established. But this the child can accomplish only after tedious work and great effort. To quote again, "The studies as classified are the result of the science of ages, not of the experience of the child."

What provisions does the average course of study make to introduce system and classification gradually? Does it

present experiences in the order in which we find them in the environment? How often do we find fine systems of minute classification, new centers for grouping introduced in early lessons? Every school book in geography begins with the following topics: (1) The earth—shape, size, circumference, etc. (2) Divisions into (a) land and (b) water. (3) Subdivisions of land—continents, peninsulas, capes, islands. (4) Subdivisions of water—ocean, bay, strait, etc., etc. The text-book approaches the subject scientifically, hence the book is really not written for exclusive use by the children but written for the teacher. Our school grammars begin with—Language: (1) Kinds, (a) oral and (b) written; (2) Elements, (a) words, (b) sentences; (3) Classification of words, Parts of Speech; (4) Kind of sentences, etc., etc. The grammar, too, is not written from the point of view of the child but from the point of view of the subject or of the specialist, whose scientific knowledge of it gives him this scientific system; hence, we cannot follow this order; we must begin with a study of the sentence and develop the subject and its topics in a way that is determined by the child's outlook upon life.

Application to the Average School Course in Physics.—Criticism is easy, especially destructive criticism. But when an arrangement seems to violate every sound precaution necessary in introducing a new and difficult subject objections are justifiable and perhaps helpful. Let us outline the average course in physics as given in many elementary schools:

First Grade: Mechanics of Solids; Mechanical Powers—gravity, levers, wheel and axle, simple machines, etc.

Second grade: Mechanics of Liquids and Gases.

Third Grade: Sound—its phenomena. Heat—phenomena and uses.

Fourth Grade: Light; Electricity and Magnetism.

Let us review, for a moment, the three divergencies between the child and the curriculum: the narrow, but personal and concrete world of the child versus the breadth and abstractions of the curriculum; the unity of the life of the

child versus the subdivision of studies; the principle of abstract classification versus the natural order of the child's experience. The common elementary school course of study begins with a consideration of the forces of matter and their logical classifications and subdivisions into levers, pulley, inclined plane, etc. It proceeds to the less solid matter, liquids, and then to what is even less concrete—gases. Sound and heat, whose more intangible medium is air, come next in this logical sequence. This is followed by "light" traveling through ether. Magnetism and electricity bring up the rear guard of this most logical and scientific array. This is precisely the arrangement one would follow who sets out to write an elementary text-book on the subject. It is order and sequence which only the later student of the subject can appreciate.

The development in the average elementary school course begins with things unknown and unrelated to the child. Will this arrangement of the topics of physics enlist the child's interest? Will it be full of meaning and suggestion in the light of his past narrow experience? Is not this the reason why our children, who are confronted by this thorough presentation of the subject-matter, talk words, empty sounds? "Specific gravity, ebullition, liquefaction, propagation, conduction, intensity of light and sound, center of gravity," are words which call up their corresponding memorized formulæ and the drilled experiment which few, in most of our elementary schools, can explain. Where is the "point of contact"? Why do we not begin there?

How much more rational and psychological it would be to begin with simple phenomena of electricity and magnetism such as the child sees in his daily life. The attraction of a magnet, the magnet affected or produced by a current can be studied by analyzing a house bell. The principles of physics will not be exhaustive or deep, but just enough to explain the workings of the bell, the telegraph ticker, and similar applications. The subject would thus begin with the concrete, with the "point of contact." Is there any sound principle

which explains why boys and girls of the age of twelve should be given a course in physics which compares favorably with that given in the fourth year of the average high school of the country? Actual examination of such classes proves conclusively that such procedure makes for shallowness, superficiality, a "masquerading in words," a game of verbal hide and seek between teacher and child.

How Can We Harmonize the Child and the Curriculum?—

Since our modern curriculum presents divergencies between itself and the child which are almost inherent, the urgent question which presents itself is naturally, "What can be done to bring about harmony where naught but discord seems to reign?" This question was never asked before the great Herbart wrote. Educators knew too little of psychology to discover any such divergencies as those which have been considered. Herbart placed psychology on a definite footing and then tried to square educational theory, teaching, and the curriculum with the lessons of psychology. It was Ziller, Herbart's great disciple, who elaborated and made famous the work of his master. He interpreted the doctrine which Herbart advocated for the harmonization of the child and the subject-matter. To-day it is known as the "Culture Epoch Theory."

Culture Epoch Theory.—This view holds that the individual in his development passes through the same stages as the race did in its own evolution. Philosophically, we can summarize the theory with "Ontology recapitulates phylogeny." Hence, in order to fit man for our present society, we must take him through the stages through which society passed in its natural social progress. Thus we are told that society, in its changes from primitive to modern form, began organized life in a hunting and fishing stage. Man then learned to tame animals and thus entered upon the second step, the herding stage of social life. The wandering tribe accidentally discovered the secrets of the soil and then took up an agricultural life. The series in the social evolution ended with the manufacturing and industrial stages. Edu-

cation must take the child through these culture epochs in its attempt to fit him for our life.

It seems as if the individual in his development passes through stages whose characteristics, impulses, and interests are identical with those of the race. In his development the individual first leads a life as a child which is physical, active, full of play and fight; a life that shows only physical wants and needs; a life which is as free as the wind and throws off all restraint and control. This corresponds to the hunting and fishing stage, the savage life, equally full of fight, play, activity, and just as reckless and uncontrolled. The individual, like society, soon outgrows this initial stage. A tribe in the course of its history leaves the wild, barbarous life behind, and takes to herding cattle, wandering where they wander, following where they lead. In the child, too, we find that the desire for mere activity, play, fight, freedom from restraint are only temporary. He, too, becomes nomadic; the "wanderlust" seems to possess him as it did the race. This is the age when the boy dreams of running away, of becoming a pirate or an Indian chief. "Ask the child of eight or nine to build a house and it usually takes the form of a cave," is the assertion of the "Epoch Culturites." This shows social atavistic tendencies, the constant reversion to older and lower social stages.

But the race, in its development, soon passes through this nomadic life and settles down to a definite industry, some form of farming or handicraft. With the end of this wandering career of the race we find the beginnings of fixed communities, customs, and regulations which guarantee personal and property rights, each individual now voluntarily submitting to restraint. The child too soon grows out of the pirate and wandering stage; he selects a particular activity as his vocational ideal, the highest consummation of his ambition is to become a fireman, a general, a policeman, a physician, or a teacher.

The Culture Epochs as the Basis of a Course of Study.—According to Ziller, one must argue that, if each individual

is to realize the experiences of his race, then let him retrace the stages in the development of the race. Teach, during the first year, all about society's first stage, the life of the savage; the second year, the second stage, etc., until the modern social status is attained. This argument has been a favorite among philosophers of all time, but only a few practical teachers ever sought seriously to make it the basis of an entire curriculum. In discussing manual training it was shown how each of these stages can be made the center around which all the work revolves, the child constructing the home, the utensils, the tools, the weapons of that particular stage. Others have sought to develop early reading lessons according to a table which reproduces the successive epochs of the civilization of the race. "Hiawatha" is read for its study of savage society with hunting and fishing as the center and circumference of barbaric life. The old Persian stories form the content of the next grade because they portray the social stage that is characteristic of nomadic existence. "Kablu, the Little Aryan Boy," represents the agricultural stage of civilization; his life is therefore next upon the scene. The stories of the Greeks, the Romans, the ancient Hebrews, the Christian Fathers, Columbus, the Puritan Fathers, Franklin, Washington, Fulton, Morse, are each taken up in turn as a great stepping stone in the course of social evolution leading to our present complex national and industrial life. But, aside from these few attempts in manual training work, in reading, and in history, it is very doubtful whether we can or, if we could, whether it would be desirable to reproduce in detail each of the preceding stages of social evolution.

Advantages in Following the Culture Epoch Stages.—Those who would follow this order of teaching absolutely tell us that the present age is difficult of comprehension, because its complexity is the result of ages of development. It is useless to attempt to teach the child our modern social and industrial organization. To appreciate the wonders that we have to-day we must see modern society from a contrast, in

historical perspective. Schools following a Culture Epoch curriculum spend the early years showing the child how the primitive workers used to spin; when he comes to the modern weaving and spinning machines he can readily understand the marvelous progress. To appreciate the wonders of modern transportation with the express train and the giant steamships, the child must see in review the old ox-team, the horse and wagon on wooden rails, the pack mule, the carriers of the Sedan chair. The child cannot appreciate the extent of our progress in means of communication, how nearly omnipresent we are through telephone, telegraph, and "wireless," unless he has seen in contrast the old messenger on foot, the old-time post, the archaic methods of the past. The child who was born and brought up on a high mountain does not understand what is meant by altitude. Only when he descends into the valley does he realize how near to the clouds he has been living. To make the child realize our present status in government, in knowledge, in industry, in morality and ethics, let him study primitive government, knowledge, industry, and morality. The present is understood only when it is seen in a proper perspective; present complexity becomes more intelligible because the child sees the steps, stages, and forces in the forward movement of progress. Going from epoch to epoch the child receives ideas in the one which prepare it for the next, for "that which has become explains that which is becoming."

Another argument advanced for making each culture epoch the center of the curriculum each succeeding year is the fact that all studies can readily be centered around each stage. Thus in the first year the children study the "Story of Ab" or "Hiawatha." That theme becomes, as was shown, the topic around which early reading develops. The conversation lessons are on the same theme. In the number work the children compute examples dealing with problems taken from the hunting and fishing activities. The songs, the dancing, the games, as well as the manual training, revolve about the same interests. Correlation is embodied to a maximum;

but, as so often happens in education, an idea is carried beyond its rational limits.

Limitations of Culture Epoch Curriculum.—Most of the analogy traced between individual and racial development is accidental, far-fetched, and fanciful. Whatever initial instincts we have, whatever innate primitive impulses we may show are modified by present life and environment. Because Paganism preceded Christianity, should we teach the former before the latter to the child? According to the Culture Epoch Theory, this should be the sequence.

How can one tell that a child has passed out of the second stage and is now in the third? Very often a child seems to show by his actions that he is on a far higher plane intellectually and morally than was supposed. But how often are we disappointed to find him betraying evidences that he is still a slave to impulses of the lower stages of life!

Another difficulty in making the Culture Epoch Theory the basis of our modern curriculum lies in the fact that subjects could not be introduced into the course of study until the child arrived at the proper stage in his development. Those subjects which belong to later culture epochs and characterize modern life would be postponed until the end of the course. The school would be turning out a vast majority of the children ready to take up life in a past stage but hardly fit to join present society. Whether the individual relives the life of the race, whether ontology recapitulates phylogeny, is still a question of theory rather than fact. Granting the hypothesis as pedagogical gospel, it nevertheless remains a truth that we do not recapitulate all the life of the race, nor do we go through more than the vague and broad tendencies of the ancestral life. The theory of racial recapitulation must be held within bounds.

When we reconsider the divergencies between the child and the curriculum, and recall the conclusions about the need of establishing a point of contact between the child and the subject-matter, it is readily seen that the child is not interested in what developed first in the race. What is first in the

course of development is usually interesting material for philosophic speculation. The child wants the concrete, he feels a special need for what is of the present, for what is part of his world. The telegraph, the telephone, the electric car, the aëroplane, not the ox-team nor the foot messenger, concern him. Present history and current politics can be made absorbing. Ancient history and past statecraft are tedious. Football, basketball, baseball, rather than the games of the young savages, thrill him. Whittling a cord winder, and making a boat or an article of furniture are serious tasks; manual training that creates a tomahawk, an antiquated bow and arrow, suitable for first and second-year children, lacks educational seriousness in the eyes of the older child. Given a set of building blocks the average child builds a bridge or a modern structure. The observation that children left alone will build a cave and reproduce forms of ancestral life is true only of the child whose mind has been filled with stories of savage life, and whose manual training has busied itself with the creation of the appurtenances of such society.

Thoreau tells us that the child relives the life of our ancestors by playing in those activities which meant, not play, but activities of life. "The pursuits of earlier generations become sports of later and more highly developed civilizations." Rosmini, a contemporary of Herbert, tells us, "History has the same epochs in the individual as in the whole human race." Baldwin is a believer in the theory, for he says, "The infant is an embryo person, a social unit in the process of forming, and is, in these early stages, plainly recapitulating the items in the soul history of the race." Goethe tells us, "Although the world in general advances, the youth must always start again from the beginning, and, as an individual, traverse the world's culture." These are beautiful conceits such as only the poet and the philosopher may indulge in without restraint or stint.

The Culture Epoch Theory tries to prove a similarity between the social stages of the historical development of the race and the mental stages of the psychic development of the

individual. It usually seeks, therefore, to make identical sociology and individual psychology. Failure is inevitable. But its motive and desire are big and broad. It tries to reproduce in each individual's life and mind the life and mind of the race. This theory, therefore, well merits its place in a study of the sociological aspect of education.

General Conclusions: The Theory Harmonized.—A single point of view, an analogy between the psychological stages of individual and racial development, may meet with greater success in trying to establish a harmony between the child and the curriculum. In a general way the child, in its development, passes through three more or less distinct successive psychic stages, (a) the Presentative, (b) the Representative, and (c) the Thought stage.

From the very name it can readily be inferred that the child in the Presentative Stage learns only by having things presented to him. It is the period when the child relies solely on its senses for its knowledge of the outside world. Sense perceptions supply the mental bricks and mortar which build mental content. Therefore, only that which is concrete appeals to the mind in this stage. Whatever is taught in this period must, therefore, be presented objectively. The child must actually see, handle, break apart the things taught. The teachers of the kindergarten and of the first two years of the school, realizing that the pupils are in the presentative stage, plan their work in the actual, the real world. The arithmetic, the reading lessons, the games reflect the things of their immediate environment, of their home, their street life, or the vocations of the parents.

The Representative Period is characterized by reliable retention and active imagination which can be used for serious ends. What is taught now need not be objective. The child has the ability to recall and repicture what he saw before; he can "*re-present*" what was presented before. History, geography, imaginative compositions, and the like are introduced to take advantage of the new representative powers in this second stage of individual psychic evolution.

At the age of about ten or eleven the mind in maturing gains enough power to compare, to judge, to reason about the elements presented and represented. Subjects taught in this stage require thought. In history cause and effect are emphasized; in geography physical phenomena, antecedent and consequent, are taught; in arithmetic two or three processes are combined; in language work topics are more or less original, and technical grammar receives attention. This development of the child must determine the development of the curriculum. Does the race in its development show three psychological stages analogous to these? We must trace the progress of social psychic evolution before we answer this question.

The savage represents the social presentative stage. All he knows of the world is what he sees and meets. His life never transcends his actual experiences. He is an improvident creature, he never foresees to-morrow with its inevitable emergencies. If he has food he eats; if he has too much he gorges himself and destroys or loses the rest. The gathering clouds do not suggest the impending storm. He lives only in the present. His religion reflects the same concrete gods, the flood, the thunder, the waves, the wind, forces real and concrete, constantly appealing to the senses.

The next psychic step in civilization finds the race in an imaginative stage. It is an age of mythology, of wild and lurid fancy. There are special gods who look after the wind, the sea, the flood, the thunder, special spirits which pursue the wicked and reward the good. This is, therefore, a stage of dread and superstition. Any early literature shows that the stage above barbarism is a stage of imagination, for it abounds in myths, fairy tales, impossible heroes, and superhuman people. It is the period when the race is in the representative stage, the period of social childhood.

The third stage, the Thought Stage, comes in the course of cultural evolution. The race begins to question these powers and gods and evolves a religion of love. Government that was established by force is maintained for logical reasons.

The natural phenomena are studied. The individuals assume the attitude of "why," "wherefore," "why not"—points of view which show clearly that social thought and reason are alive. The developments of the thought stage in society are as infinite and varied as those in the individual. From the psychological point of view, therefore, it is possible not only to trace an analogy between social and individual development but also to evolve stages which determine the order of the introduction of various studies in the curriculum.

SUGGESTED READING

(List Given at the End of the Topic, Chapter IX.)

CHAPTER VII

THE CURRICULUM: ITS SOCIAL ORGANIZATION

Elements in the Modern Curriculum.—Thus far the problem of the divergencies between the child and the curriculum and the attempt to bring about a harmony between the two were the topics of discussion. We now turn to an analysis of the basic elements which a modern curriculum must possess. Since the curriculum is a historic development the historic point of view may be most helpful in analyzing it into its component elements.

Before the sixteenth century the curricula of the various educational institutions, both elementary and secondary, were intensely humanistic. The literary inheritance was the all-important element in the course of study. Language lessons, reading, writing, and a few mechanical rules in arithmetic made up the proverbial three R's of the elementary schools. Latin and Greek were introduced as soon as possible. Early in the secondary education one finds philosophy, metaphysics, and every form of hair-splitting speculations. The humanistic study concerned itself with the past, it busied itself with studying about things and actions, hence we may characterize the humanistic curriculum as a study of the reflections of things and acts of the past.

With the sixteenth and seventeenth centuries changes were gradually introduced. The new world which was discovered was now opened; great strides were made in printing and navigation; inventions, with their enlightening influences, were numerous. These new and progressive movements remolded life. Even philosophy and religion changed their lessons and outlooks. They now taught that the salvation of

the soul and the Kingdom of Heaven were not denied to those who lived worldly lives, who enjoyed the benefits and fruits that this world had to offer. All these changes were soon reflected in the curriculum; it, too, became worldly. Bacon ushered in the new trend in education. He preached: "Study science, real life, real things, real actions." Little by little the "Realistic" element was introduced into the curriculum, with its demand for a study of the actual, the real. To do this, the present as well as the past had to be incorporated into the curriculum. Science, both organic and inorganic, teaching through experimentation and observation now received a place of equal rank with language studies and memoriter drill. The curriculum was now humanistic and realistic.

The middle of the eighteenth century found a new principle molding the course of study, viz., "Disciplinary Value of Studies." The new idea tried to emphasize that each subject is important only as it affects the mind. It received its impetus from those educators who were basing all their teaching on psychology. Those studies which had no clearly defined "psychological coefficient" were regarded as useless. Arithmetic was taught because it trained the mind to reason deductively; science because it developed the mind's power for inductive reasoning; literature was taught to educate the imagination; geography and history the memory, etc. Each subject had its allotted faculty to unfold. Education became interested, not in what was learned, but in how it was taught. The process of acquisition, not the amount nor the nature of the subject acquired, was the keynote of the disciplinary school.

A thoroughly modern element is constantly being introduced which is becoming supplementary to each of the three older elements: "The Social Standard." It has been emphasized in the development of the subject thus far, and needs no further discussion now beyond the mere statement that education is not content with the old justification for the introduction of the school subjects, "the subject matter of arithmetic, grammar, geography, history, are disciplinary and

train the mind." It asks, "Is it useful as well as disciplinary? Does the individual need it in the social life that he is to live?" If the subject-matter does not meet the test of social efficiency education can find plenty of other material which is both socially necessary and disciplinary. The school-masters are throwing out of the elementary school subjects those parts that have no social use, but which were taught for generations because of traditional and disciplinary reasons. A modern curriculum is, therefore, a composite of Humanistic, Realistic, Disciplinary, and Social Elements.

Principles of Organization.—These four elements of a modern curriculum must be organized with definite ends and ideals that must be attained. The discussion must, therefore, pass over to a consideration of those principles of organization which seek to make the course of study a most efficient socializing agent in the life of the pupil.

Adaptability.—The course of study should not be so fixed and limited that it cannot be molded readily to fit the needs of special cases. No class is an exact duplicate of any other, no two have the same needs and the same weaknesses. In a large, progressive city the needs in one district may not be the needs in another. There must always be, therefore, a liberal margin, a broad leeway, to enable the teacher to adapt the curriculum to the special needs and peculiarities of a particular class.

The most efficacious means devised thus far, in a few of our leading cities, is to allow "Unassigned Time" to the amount of two hundred forty or three hundred minutes a week. In a cosmopolitan city, with a class of children who hear no English at home and worse than no English on the street, the teacher can use almost all of this in oral drill, extra reading, and added composition exercises. A teacher in another school may find that the English of the pupils is fair but the arithmetic is below the average. The "Unassigned Time" can be devoted to this end. Every teacher knows how much more efficient class-room instruction could be made if such an opportunity were given to bolster up weak points

or to give deeper insight and thorough comprehension to knowledge which otherwise remains in the realm of the superficial.

Some curricula fix the subject-matter in each grade so minutely that the procedure resolves itself into nothing less than a straight-jacket method. The teacher is told not only that she is held responsible for two hundred and fifty spelling words during the term but the exact list is prescribed; not only must one composition be taught each week but the nature and the topic of each week's composition is imposed. Such an iron-bound assignment is hardly defensible. The work in the varied branches of English must be related, the spelling words must have their origin in all the expressional exercises of the children, the topics for composition must have an intimate connection with class-room activities, must be an outgrowth of the child's life and interests. No teacher who seeks spontaneity and personal expression in composition knows the second week of the term what will be most appropriate for the twelfth. Such practices in which assignments are irrationally minute not only deny the teacher's possession of the professional ability and insight necessary to adjust the subject-matter to the specific needs of a particular class, but make for an isolated, unrelated, uncorrelated curriculum. It is strange indeed that a system in which the teacher is the vital educator, the only real agent in the application of the course of study to the children, not only gives that teacher no "definite and authoritative position in shaping" the curriculum, but usually does not even consult him in its formation.

Unity.—The principle of unity was vaguely suggested in the discussion which immediately precedes. It emphasizes that the various subjects ought to be so arranged in the various grades that they will run parallel and thus the child will take with it, not a multitude of kindred impressions, but a unified and central thought. This would help reduce the chaos that exists in the courses of study in the elementary schools. This principle of organization insists that if,

in elementary physics, the mechanics of solids, liquids, and gases be taught in a given grade, the geography of that year be physical rather than commercial, so that the child can apply the lessons of physics to the principles of physical geography.* If English history is taught in one year of the elementary course the grade in which the second half of the subject is taken up should also study the commercial geography of Europe, and especially of England, so that commercial policies reflected in the history of England can be correlated with the commercial facts of the geography. To assign the commercial geography of Asia, Africa, Australia to the grade studying English history is unjustifiable disregard of the principle of unity.* To assign the teaching of the geography of North America, with especial emphasis on the United States, in the grade that studies the periods of discovery, exploration, and settlement is an attempt to produce this harmony and correlation of subject-matter. Opportunities for such parallelisms abound. To neglect them shows a lack of pedagogical insight.

Flexibility.—Elementary curricula are often too rigid in point of time and, therefore, do not provide for the varying capabilities of the children. No course of study should prescribe a maximum. A minimum limit is the only sound demand that can be made. It is wrong to say "Teach only so much in 5-A or so much in 4-B for all children." If a child can go beyond that limit it is wrong to tie him down.

A model curriculum makes provision for three rates of speed for "A," "B," and "C" children. In that way it teaches as fast, and only as fast, as the respective groups can travel.

Elementary education to-day sins more against the bright child than against the naturally dull one. The former comes to the school favored by nature with strong mental faculties, good receptivity, and limitless possibilities for development. Instead of allowing the child to develop the mental powers at a pace and rate that are natural to him, the present lockstep

See Course of Study, New York City Elementary Schools, as a type.

system forces him to travel at the speed of that child who is just a bit below the average. The bright child thus marks time while his less gifted brethren are forging ahead. This stultifies growth. It artificially fetters and chains powers striving for progress and development. "The laws of the navy must prevail in the class-room; the speed of the fleet is set by the slow-moving ships," is the dictum often laid down with great solemnity by educational dignitaries. But the analogy is both unjust and impossible. The children in our school must be so grouped that only those of uniform speed are allowed to travel together.

Our school system demands four years in the primary, four years in the grammar grades, four in high school, and four in the college. Why this mystical four? Why four years for each cycle? Do we not know large numbers of children who can accomplish three terms' work in two? The only reason they do not do so is because they are not given the chance. When children are grouped according to capabilities it is found that those in group "A" can readily complete four years' work in three, or at a reduction of twenty-five per cent. of the time. When the same principle of flexibility is applied in the grammar grades the brightest children fulfill the requirements of the course in six years. If a "B" child can complete the work in seven years he should be allowed to do so. The "C" child is given the long eight-year course. The rigid curriculum, with its fixed maximum, has worked irreparable injustice upon the bright boy.

SUGGESTED READING

(List Given at the End of the Topic, Chapter IX.)

CHAPTER VIII

THE SOCIAL CONTENT OF THE CURRICULUM

The preceding study concerned itself with the elements of the modern curriculum and the principles governing their organization. The next logical question that presents itself is, "What shall be the appropriate subject-matter of the curriculum?" An earlier conclusion stated that the object of the curriculum is to make the individual part of the race, "to reproduce in his mind the mind of the race"; hence it must contain all the elements of the complete experience of the race. To give all the facts necessary to socialize the individual, the curriculum must embody: (I) The Scientific, (II) The Literary, (III) The *Æsthetic*, (IV) The Institutional, and (V) The Religious Factors. This fivefold division is the traditional classification of the social content of the curriculum.

I. The Scientific Factor

Evidently the child is entitled to that mass of data which will explain why our view of the world and all its accompanying phenomena is so different from the conception held by the ancients. What has changed our mental ken? Society must teach its successors how to curb Nature's forces; it must give the child the secrets of the physical environment which it gained in ages past. This constitutes the scientific inheritance with its twofold educational value. First, it teaches the child that he must strive to systematize his knowledge and make it capable of verification, so that he can better interpret truth. Its second lesson is that he has much to learn without the teacher or the book; through observation and

individual experimentation he becomes master of a vast treasure house of knowledge. It tends to show the child the capabilities and possibilities within him. It hence develops a spirit of self-reliance and partial independence.

Spencer and the Apotheosis of Science.—The leading exponent of science in the modern educational world is the late Herbert Spencer. To him the sole function which education has to discharge is “to prepare the individual for complete living.” Granting that, his next question is, “What are the activities of complete living”? He sums them up in five groups: (a) Activities which govern self-preservation. These activities have reference to bodily health and proper food and clothing. Physiology, hygiene, biology, vocational mastery, commercial and physical geography, etc.: these are the subjects which are basic in this fundamental activity of life. *Science* is the watchword. (b) Activities which indirectly minister to preservation. Housing, sanitation, avoidance of physical danger, are illustrations. These problems are solved absolutely by physics, mechanics, laws of mathematics, chemistry, etc.; in a word, by *science*. (c) Activities relating to proper care of offspring. These duties the parents cannot properly perform unless they know hygiene, physiology, chemistry of foods, psychology of the immature mind, and the like. Here, too, *science* is the guiding star. (d) Duties and activities of citizenship. To understand the social life and organization about us we need history, but not the history of the schools, not facts, battles, wars, men that are dead, achievements that are past, but a study of the social laws which have governed society in the past and will hence control mankind in the future. Real history is, hence, *scientific sociology*. (e) Activities of leisure, the enjoyment and participation in all forms of art, music, and literature. But, as these “occupy the leisure of life, so they should occupy the leisure of education.” Only after science has been thoroughly mastered should the literary and æsthetic elements be incorporated into the curriculum, Spencer argues. In the final analysis, he holds, science is the key to all art. The

sculptor has a scientific knowledge of anatomy, the artist knows the science of light and color, the musician must work in accordance with the laws of sound. Without science there can be no art beyond the crudities of initial attempts.

Spencer, therefore, counsels an appreciation of art that is intellectual rather than emotional. Science is the key to all activities of life; their proper performance is impossible without it. His is an education of the head, not of the heart. In his chapter, "What Knowledge is Most Worth," he often confuses "complete living" with "easy living." "Harmonious life" he very often makes to mean a life with little friction, a life requiring least effort and trouble. Moral fiber and strength of character are built up through effort, through work, through the struggle and the striving that try men's souls, not through ease and comfort.

II. The Literary Factor

Inspiration of the Literary Factor.—The second element in the social content of the curriculum is the literary inheritance. It is the gateway to the dreams and ideals of those who have preceded us. It gives mankind "the crystallized thoughts of the past." It offers the student a record of humanity's development, and projects him into the ages that have passed. It is the telescope which puts the remote past before our immediate vision for our careful scrutiny and inspiration.

Literary Factor of the Curriculum Must Rise Above Dead Formalism.—The function of the literary element is to convey thought. We prize it for its ideas, ideals, and inspirations. Viewed from this thought element, from this thought function, has the literary factor been altogether successful? Do elementary school children or secondary school students regard language as a thought carrier? Do they look upon it as an inspirational subject? Too often the teacher is forced to answer negatively, for language work, both in English and in the foreign tongues, is reduced to a dead formalism, to a mechanical drill in technical grammar, rhetoric, and fig-

ures of speech. The recognition of a noun, a gerund, a simile, or a metaphor becomes an end in itself.

The Classics as Taught Are Devoid of Inspiration.—

The average student of Latin or Greek looks askance and listens incredulously when he hears the classics extolled as inspirational. In vain he tries to recall the joys of Homer, the charm of Virgil. His recollection brings before him a clear picture of his Latin recitation. Thirty lines were assigned; this was the result of a mathematical division of the total number of lines to be studied, by the number of recitations. These were dissected, and, after laborious attempts, synthesized into rational English. The recitation was characterized by questions which sought to uncover the student's ignorance of vocabulary, grammatical structure, facts in footnotes and commentaries and the like. The whole lesson was a language puzzle. The gain in thought was hardly commensurate with the effort and the labor. Teachers often forget that language is a means to an end; it is a device which makes possible the communication of thoughts. Language itself, apart from this function, has no other value, for, stripped of its thought element, it becomes mere ejaculations, empty sounds as stupid as the jibbering of the monkey.

The Vernacular Often So Taught, Too.—But one need not go to the dead languages for an illustration of language teaching which is completely monopolized by the technique of speech. A teacher who was engaged in explaining "Evangeline" to his class stopped for some minutes with his children on the line, "Gabriel, so near and yet so far." After considerable questioning he brought home the idea that this is a paradox. The teacher hardly scored a point to his credit when the explanation was over. Here we have the climax of the whole poem, the climax of the whole term's work, everything preceding led up to it, everything following led down from it; and yet the fact that Longfellow had put his climax into paradoxical form was made central, to the exclusion of everything else. The only message that the author had to utter was—"a paradox!" What an excep-

tional opportunity the teacher missed for bringing out the inspirational and the thought side of the work, the cultural aspect, the hidden treasure for reflection and appreciation! "Gabriel, so near and yet so far" is a tragedy reflected in our own daily lives. We are constantly beset by opportunities which are within our reach, opportunities which beckon to us, for they lead to our goals, our ambitions, our hopes and ideals. Yet we see them not; it seems as if they are hidden from view by a mystic veil. So, too, Gabriel, the dream of Evangeline's life, was within reaching distance, yet she was as blind to her opportunity as we are to ours. In our eager search we always seek them afar. We seldom look about us and take advantage of the infinite possibilities in our immediate surroundings. Think of reducing this climax to the cold fact,—“a paradox!” If literature is to be the means of arousing the imagination, of training the finer sensibilities, of cultivating a true æsthetic appreciation, then such cold-blooded literary murder must not be tolerated. We must arouse enough feeling and spirit in our work to make the children relive the lives of the characters; to make them feel that “when they are hurt they bleed blood, not sawdust”; we must see that the children suffer the smartings of their pangs. This is the kind of teaching that stimulates the desire to read, that makes for self-culture, that arouses a dynamic interest.

Meaning of the Dead Languages.—A moment's thought may serve to show the inappropriateness of the term “Dead Languages” as applied to Latin, Greek, and the unspoken tongues. Rightly taught, there are no “Dead Languages.” Can we characterize those languages as “dead” that contain the lessons and inspiration of the epics, the plays, the histories, the poetry of the Greeks and Romans! Have their literatures not been models for our best writers, have they not influenced our own language, that we call living! No language whose literature has written so much of man, that pulsates with the life and emotions that we find in Homer, in Virgil, in Xenophon, that contains the philosophy, the sociol-

ogy, and the ethics of Socrates, of Plato, and of Aristotle is "dead." Call it unspoken, obsolete, but not "dead." Any language is dead when we give all effort exclusively to its form and its laws of structure. Is English a living language when its masterpieces are taught on the dissecting table, with microscope and scalpel; by studying meaning of words, names, allusions, figures of speech, and laws of versification! Neither time nor age, but the teacher and the method of teaching, make a language "dead" or "alive."

The Expressional Side Must Also Be Emphasized.—The literary element often falls short of its possibilities because the expressional side of the work is not emphasized properly. This is a second and equally grave cause which explains why so much of the language work fails to measure up to legitimate expectations. What is meant by the expressional side of the work? The first stage in the acquisition of knowledge is a stage of receptivity, in which the individual mind is absorbing; it is, therefore, passive. It is the stage when knowledge becomes internal. After this information is assimilated a reaction sets in and the mind attempts to make the internal, external. We experience a craving to express what has been impressed, to communicate what has been acquired. This craving for expression is the fundamental requisite for all language work; it is the *sine qua non* of the composition and the reading lessons. The principle is so obvious that it often meets with the contempt shown to the familiar. A few illustrations may suffice to bring the matter home.

Application to Reading.—In oral reading the teacher calls upon a child; he reads the allotted paragraph. If the corrections are few in number he is happy to escape the censure and the accompanying bad mark. Ask the child why he reads aloud. The only answer that can be elicited from him is invariably either "Because the teacher said so" or "Because the teacher wants to see if I can pronounce properly." The child is never made to feel that he reads aloud because he has something worth communicating, and, therefore, desires others to hear it. He reads only to show the teacher his

faults or his ability; hence, so much of oral reading is lifeless and without expression in the lower classes.

Take the child out of his seat, have him read facing the class; make the child realize that he has something there that is worth the telling. Standing in front of the room he reads to the children, not at them, as he does when he is in his seat. What life and spirit can we expect when the child is reading, not to a class of faces, but to forty backs or heads? Occasionally it is advisable to have the class close their books and listen to the oral reading. At another time each child is made responsible for an entire short selection in his reader. When his turn comes he reads his own assignment or choice to the listening class. If children are encouraged to bring to class newspaper and magazine clippings which correlate with the other subjects, the best ones should be read to the children by those who found them. Every means at the teacher's command should be emphasized which develops this social spirit and social motive in class-room recitations. This makes the children feel that their classmate who is reading is reading for them, and not alone for a criticism from the teacher. The oral reading is always better if the child is conscious of his audience; it is more natural; the expression is not as stilted, artificial, and exaggerated as the kind that the children manufacture when the teacher commands "More expression!"

Application to Composition.—The same principles govern written language work. The same motive must be aroused in the child as prompts adults to do the tasks akin to those assigned to pupils. In real life, in society, a person indulges in correspondence because he has something to say to some one. If he had nothing to say, or no one to whom to write it, he would refrain from the intercourse. The teacher must, therefore, make sure that the child feels that what he is writing will be read by some one, if not by the teacher, then by a member of the class, and that it is a theme on which he has ideas and preferences craving for expression.

Too often the child is assigned a topic which correlates

with work in geography, history, or nature study, but which means very little to him. He memorizes a few facts that he heard from the teacher, or saw in the book, on "Daniel Webster," or "How Coffee Grows," or "The Maple Tree," and commits them to paper. The ideas are not his, they are not part of him. He does not feel the subject, and, therefore, expresses, not himself, but the book or teacher. Then, again, to whom is he writing? If to no one, then why is he writing? Because the expression is forced and does not spring from a natural desire for communication, the poor results in composition are inevitable. The cause can be found very readily—the teacher does not supply the proper motives for expression. The question which suggests itself is, therefore, "What can the teacher do to make written composition more natural and urgent in the eyes of the child?"

The answer is twofold. First, only those subjects which are part of the child's life, about which he is brimful, about which he feels an impulse "to make external the internal" should be selected. Let the child introduce his own personality into the composition—if necessary—have it all written in the first person. Instead of "Daniel Webster" let him write on "My Interview with Daniel Webster"; instead of a cold and formal narrative of "Bunker Hill," change the topic to "My Experiences as a Soldier at Bunker Hill," if the topics must be taken out of history and geography.

The suggestion under discussion finds a vivid illustration in the following occurrence. The boys in a sixth-year class were writing a composition on "Election Day," the holiday of the week. Why children must write in each class "How I spent my ——" is not altogether understood by the lay mind. But certain it is that, as sure as the kind fates bring a holiday, the meaner ones will always suggest to the teacher the inevitable topic for composition. The teacher's outline on the board called for (1) meaning of the day, (2) who votes, (3) how they vote, (4) importance of voting, (5) what officers were to be elected, (6) do they vote in other countries? where? The composition turned out the average life-

less products of the class-room. The cause is obvious. The children wrote on "Election Day" from the adult's point of view. To the child "Election Day" means one thing: fires, fights, obtaining of fuel, organizing boys on the block for the great feat, choosing a leader, and the joy of watching the flames of a well-built fire. To the adult "Election Day" means all the serious aspects connected with exercising one's suffrage. Let the boy write on "How We Built our Bonfire" and the result is a boy's expression of a boy's "Election Day." Have him write on the "Social Importance of Voting" and the dull, formal, mechanical product that is so common in our schools is the inevitable result.

A second suggestion counsels that the children write with a conviction that the composition will be read by a particular person in the class. Let them choose their friends with whom they will exchange compositions. The child must feel that, although he is in school, he is writing from the same motives that prevail in real social intercourse. If the week's composition is a letter, have it addressed to his neighbor instead of an imaginary cousin in Switzerland; the next composition brings an answer from each child, addressed to the original writer. Written work, thus vitalized and made real, shows spirit and spontaneity that formal class compositions usually lack.

A study of the notes that children pass around the room surreptitiously, and a comparison of these with the regular class compositions teach a very interesting lesson. These epistles, when judged as composition exercises, are often better than the regular compositions given with all the pomp and the explanation of a preparatory period. The result is due chiefly to the fact that these notes spring from the two motives mentioned—they were written because the child really had something urgent to express and there was some one definite individual to whom he had to speak his mind. The urgency was so great that the child assumed the grave risks attending such procedures. But when an indifferent topic is imposed upon a child and he must address himself to

no particular person, the inevitable result must be a social vacuum.

III. The *Æsthetic* Factor

Its Function.—The aim of the *æsthetic* factor in the curriculum is to give an appreciation of true beauty and sublimity. It enriches our conception of life by introducing into it a pleasure economy. Our natural surroundings, a brook, a sunset, a starry sky, a beautiful canvas, a harmonious sound—all these are not merely objects which cause sensations and result in perceptions. They enter our consciousness accompanied by feelings of agreeableness, fraught with suggestion; there is a positive and distinctive element of pleasure in them. This pleasurable accompaniment is universal. It is characteristic of every stage of human development. This *æsthetic* craving is as inherent in the savage as it is in civilized man. The soul's craving for the joy which is experienced in the expression of this art impulse leads to an imitation, both conscious and unconscious, of the *æsthetic* elements of the environment. Art, in all its forms, is a concrete objective manifestation of the finer impulses in human life, and distinguishes man from his lower animal forms as unmistakably as do his physical and intellectual characteristics.

Butler, in his study, "What Knowledge is Most Worth," quotes a splendid passage on the influence of the *æsthetic*: "We gaze upon the painted canvas till its beauty has entered our soul. The splendor of the beauty lights up within us depths unrevealed; and far down our inner consciousness we discover something that responds to the beauty on which we have been gazing. It is as though a former friend revealed himself to us. There is here a recognition. And therewith comes a yearning, a longing for something. What does it mean? The recognition is of the ideal. Toward the full recognition of this insight into the greater workings of the spirit higher education should bend all its energies."

Justification for the *Æsthetic* Element in the Modern Curriculum.—The *æsthetic* element has a place in our present cur-

riculum because our modern psychology is broader. It recognizes feeling as the initial mental gift which is basic in our psychic development. It justifies the position which drawing, design, painting, music, and nature study have been given in our courses of study. Those to whom the three R's are still the educational "consummation devoutly to be wished for" have raised the hue and cry against these subjects and have dubbed them the "fads and frills." Their main argument reduces itself to the fact that only the artistically gifted will follow drawing or painting or singing seriously. "These subjects are of so little use in the average person's life that we are not warranted in according them a permanent and positive place in the elementary school." Their view-point is correct, but their argument is misapplied. Who, other than the teacher, uses arithmetic beyond the simple operations of addition, subtraction, multiplication, and division, simple fractions, decimals and percentage? Who needs all the facts of geography, or of history, with its dates, battles, long forgotten disputes and policies? What application can the average person make of abstract and collective noun, of "chair is in the neuter gender," and of "a participle used as a gerund"? But the beautiful is about us all the time. Music, poetry, and art are ever present in our immediate environment. If at this day educational theory is to be determined by stupid prejudice, then those who oppose the "fads and frills," in order to be consistent, must advocate less time to geography, history, and arithmetic, and more time to the "fads and frills." They fail to realize that the curriculum is not trying to make artists of our children, but merely endeavoring to inculcate in them a love for the æsthetic and to train them in the recognition of the beautiful.

Prevailing Misconceptions in Teaching Music.—The typical, modern elementary school curriculum offers drawing, music, nature study, and literature, as means of realizing these æsthetic ideals. To these subjects we must apply the pragmatic test, "Do they accomplish their purpose?" Let us examine the respective assignments in some of the representa-

tive elementary school curricula in search of the answer to this pressing question. The course of study in music in one of our first-rate cities prescribes the following work for elementary school pupils of the fifth and sixth years:

5A. Development of chromatic tones as they occur in songs and melodic exercises; continuation of the study of the nine ordinary keys with their signatures; the dotted quarter-note in two-part, three-part, and four-part measure; explanation of the meaning and use of all signs of expression and of phrasing as they occur; writing easy melodic phrases from hearing.

5B. Development of rhythm, including syncopations and subdivisions of the metrical unit into three parts (triplets) and four parts in various forms; writing of scales with their signatures, employing different rhythms; song interpretation.

6A. Development of the minor scale; songs for two-voice parts; writing of easy melodies from hearing.

6B. Sight singing in unison and two parts; chromatic tones approached by skips; writing of melodies from hearing.

Another course of study in one of our very large cities assigns the following work:

Grade IV. (a) One-part and two-part exercises and songs in the nine common major keys and in the following kinds of time: two-four, three-four, four-four, three-eight, and six-eight.

(b) Mental effect of the whole step and half step, up and down.

(c) Sharp one, sharp two, sharp five, as follows: two, sharp one, two; three, sharp two, three; six, sharp five, six.

(d) Flat seven, as follows: six, flat seven, six; eight, flat seven, six.

(e) Further study of sharp four and flat seven, approached from all other tones of the scale.

(f) Dotted quarter-note followed by the eighth-note.

(g) Beginning on the last half of the beat (the after-beat note).

(h) Keys and key signatures should be taught in this grade.

(i) Memorize the following table of major keys:—
C; one sharp, G; two sharps, D; three sharps, A; four sharps, E. One flat, F; two flats, B flat; three flats, E flat; four flats, A flat.

Grade VI. (a) Oral and written review of the nine common major keys; the dotted eighth-note followed by the sixteenth-note· four equal sounds to a beat.

(b) One-part, two-part, and three-part songs and exercises in various major and minor keys.

(c) Continuation of the study of chromatics as follows: seven, flat seven, six; six, flat six, five; five, flat five, four; three, flat three, two; two, flat two, one.

(d) Chromatic scale, ascending and descending.

(e) The harmonic and melodic minor scales.

(f) The singing of the major and minor tonic triads.

(g) The triplet (three equal sounds to a beat).

(h) Other fractional divisions of the beat.

(i) Signature and names of the 15 major keys.

(j) Meaning and pronunciation of the following terms: allegro, moderato, andante, vivace, rallentando, ritardando, molto, a tempo, poco a poco, da capo, dal segno, fine.

A characteristic assignment of still another course of study in music in one of our leading municipal educational systems reads:

Grade 4A. All chromatic tones represented by a sharp, double sharp, and cancel, in half-step progressions; and skipping from chromatic tones, represented

by a sharp, double sharp, and cancel, to remote scale tones.

Grade 5B. Individual work: The pupil should know the arithmetic of music, and the theory of common time. Sixty-five per cent. should sing at sight any exercise in the third and fourth series of the Individual Sight-singing Method, and produce satisfactory work.

Grades 6A and 6B. Individual work: Each pupil should know how to write the fifteen key signatures in correct position, and to use correctly the five chromatic characters in writing; also, the theory of common and compound time. Sixty-five per cent. should be able to sing at sight any exercise in the fourth and fifth series of the Individual Sight-singing Method, and selected exercises from the sixth series; also, satisfactory written work should be procured.

Tune: Position of sharps and flats in signature.

The five chromatic characters in singing and writing.

Chromatic tones in half-step progression ascending and descending. Skipping from a chromatic tone to a remote scale tone; skipping from a scale tone to a remote chromatic tone.

If music, as a school subject, is to be a means of inculcating an æsthetic sense and a love for the melodious in sound, these courses of study show a lack of appreciation of this basic principle. In their attempt to give the technique and the science of music, they manifest clearly their misconception of the function of music in the elementary school. The art side of music, which almost inevitably leads to an appreciation of music, is thoroughly subordinated. These assignments teach the children about music but not music itself. It is a common experience to find sixth grade children recite: "There are three forms of the minor scales, natural, harmonic, and melodic, each beginning on six and ending on six," but

when one is asked: "When would you use a minor scale?", the answer cannot be obtained. Occasionally a response is elicited, but there is little difficulty in detecting in the mechanical answer that the words, "In a sad song," were memorized. There is no doubt in the observer's mind that the children do not feel the appeal of the minor scale. That method of teaching music which requires children to live in a complex terminology, to juggle "syncopation," "major diatonic," "chromatics," to write intervals from dictation, and which gives them a minimum of song, robs the subject of the inspiration and the joy with which it is saturated.

The Science vs. the Art of Music.—These typical courses of study in music have not yet shaken themselves free from unattainable disciplinary aims and the dead formalism which these bring. The introductions to these courses of study are replete with pretentious claims which these disciplinary values prompt. The teacher is told that the singing lesson "should aid in discipline, and in forming habits of order, attention, and concentration; it should train the memory, give power of instant decision, and educate in the perception of minute differences. It should train the eye and the ear, and in general should sharpen the perception. Pupils should be taught to listen and to hear accurately." Another course in music followed in one of our large cities says: "The study of the science of music develops individual independence, concentration, self-control, and mental and physical alertness." These extravagant demands have their origin in the enthusiasm of over-zealous advocates of the teaching of music.

What Shall Music Give the Child?—All the habits of concentration and attention, all the improvement of memory and instantaneous judgment that our music lessons can give are not worth the effort of mere mention. If, as a result of the music taught in the public schools, the child turned in disgust from the ordinary coarse "rag-time" and sentimental ditties, and showed a decided preference for the innumerable pretty ballads and folk songs, the highest function of the subject would be realized.

Instead of giving all these technicalities, this finesse of the science of music, the music curriculum should be so organized that it would correlate with the memory gems. After a Scotch ballad has been taught, the poem explained, its meaning and spirit grasped, and the child has memorized it, the music should be introduced. Let the child learn the language that music speaks. Let him see how the spirit is intensified. The function of music will then be clear to him. How much more would Tennyson's "Sweet and Low" mean if taught in this way. At the end of a few terms of work of this nature the children would realize that music is a language which addresses itself to the heart. How many of us have ever heard our children voluntarily or spontaneously begin to sing a song learned in applying the science of music? Is it not almost conclusive proof that music in our elementary schools is not doing to-day all that is claimed for it and all that it can legitimately accomplish?

Drawing as a Study of Technique.—The same basic principles can be used as a guide in the interpretation and application of a rational course in drawing in the elementary schools. Its art side makes drawing a vital medium of self-expression. Its science side turns it into a mechanical, formal, deadening class-room exercise, devoid of all pleasure and inspiration.

It is obvious, therefore, that in the course of a drawing lesson the teacher must not allow the laws of proportion, placing, perspective of curves and of straight lines, laws of balance, unity and harmony of design, etc., to become focal, and thus exclude the conception of beauty. An eighth year class that spent four weeks in drawing the frying pan in every conceivable position, applying more or less mechanically the laws learned, but that had not discussed a single picture for months, was being treated exclusively to technique of drawing, but not to drawing. It is always a sad sight to see children drawing cubes, prisms, cylinders and the other geometric forms in their free hand drawing lessons. One does not meet geometric forms in his daily life. The objects in the immediate surroundings follow their general structure; chil-

dren should hence be taught to draw these, not the geometric blocks. The same principles of perspective of curves can be studied in drawing a mug or a glass as in drawing a cylinder; the same laws of convergence of straight lines can be taught in drawing a pencil box or a cigar box as in drawing a cube. The drawing of a real object always shows better results. The reason is obvious. Drawing is a medium of expression; an expressional art. Just as a child feels no urgency to express himself in writing a composition on "Trees," so, too, he feels no spirit and interest in drawing a regular cube, a perfect cone, or a pyramid. As an observer studies the progress of the grades and watches the development of freehand drawing, he realizes that the work becomes more arduous to the child. The reason is easily found. In the low grades drawing as an expressional exercise is emphasized. The child draws rooms, houses, men; he tells his story pictorially as he does verbally in another lesson. But in the upper grades this expressional aspect is lost. The study of technique, of lines, of perspective of straight lines and curves,—all these monopolize the lesson. In an eighth year grade observed, the gallon measure was the object for drawing. The children in the class spent two weeks studying the handle and the spout in various positions. While such accurate and detailed work is a necessary training in the art school, less formalism, more free and spirited exercises, and more expressional work mark the needs of an elementary school course.

No course in drawing, designed for an entire educational system, can possibly hope to approximate the æsthetic standard if it omits systematic work in picture study, and neglects critical analyses of the artistic masterpieces. If class-room drawing is to be an expressional exercise and art is to be regarded as an expression of the best aspirations of the masters, the picture-study period must be as dignified and as serious as the period for the study of the literary masterpiece. Just as the child learns to see behind the symbols, to interpret the visual elements on the printed page, and thus know the author's story and feel his emotional appeal, so, too, the pupil

must learn to look into the canvas, to interpret the lines, colors, forms, until he has caught the content and the inspiration of the master's message.

To Butler, "The Literary and the *Æsthetic* Factors" are the elements that form that "knowledge which is most worth" in the social content of the curriculum. He is a type of the Hegelian philosopher in education, who feels that the greatest gift in life is undoubtedly mind. The most dynamic mind-stirring force is thought or inspiration, not fact. Literature and the *æsthetics*, conceived in the throes of ecstatic joy, born in the uncontrollable desire for the expression of the sublime, give that mental impetus and that emotional inspiration which make them the knowledge that is most worth in the social content of the school's curriculum.

SUGGESTED READING

(List Given at the End of the Topic, Chapter IX.)

CHAPTER IX

SOCIAL CONTENT OF THE CURRICULUM

(Concluded)

IV. The Institutional Factor

Meaning of Institutional Sense.—The study of the elements of the necessary racial experience to which each of us is heir, must now take a decided turn. The scientific facts of life are essential. The thoughts and ideals of literature and art must undoubtedly be given their place in racial knowledge. Thus far the discussion has considered the content of the curriculum from almost an individualistic point of view. What will reflect the social organization in life? No curriculum can possibly be complete unless it seeks to instill in each child an institutional sense, an institutional feeling. What, then, is the institutional sense? It is a consciousness that every person is a social unit, that he is an essential element in an organized society, and that there is a machinery for social control to which he must submit. It tries to bring home to the child that life is a give-and-take affair, that we owe an obligation to society for each privilege that we receive from society, that each of us must show due respect for the laws, the customs, and the standards of society, that we must obey them voluntarily or be forced to obedience by the machinery that is established for that purpose.

How Instil This Institutional Sense.—How can the school instil this institutional sense, this social consciousness? There are two means that are open to it. The first is the method within the curriculum, which consists of teaching that subject-matter which reproduces the life of man, his struggles within

his environment, his relations and adjustments to the social institutions about him. Literature and history are well able to meet these needs and give this social view. Civics is added, for it studies the laws on which society operates, and by means of which the social functions of all institutions are determined. Ethics completes this group, for it seeks to establish proper laws of social conduct. The second means of instilling an institutional sense lies in the discipline and government that the school imposes on the children. We must now analyze the scope and the efficiency of each of these media of enabling education to exercise its socializing influence.

1. *The Curriculum and the Institutional Sense.*—A conception of the nature of history, which groups it with literature, civics, and ethics, must, of necessity, study man. It tries to give the child a picture of man's life in the past, a life amid real struggles and temptations, to show how man fell or overcame them. History, then, shows us in the proper perspective the moral life and growth of man. It gives the child a sub-stratum of morality on which he can build a future ethical life. The precepts and examples which the child learns when history is properly interpreted for him, sink deep; there they lie, dormant possibilities, ready to blossom when the moral conflicts of later life arise.

With such a social function, history must be something more than a mere record of man's past achievements. The child must not merely be projected into the past to live there; history must point modernward. To say that history studies man in the past is true, but this is an incomplete scope of its functions. If it were the only or the controlling end of history to study man's achievements in the past, what need to spend so much time and energy in the teaching of it when we are preparing the child for future life? Geography studies man in the present, not the past, hence it is of great importance in the adjustment process. History must take its cue from geography and make the study of man in the present its ultimate aim and final justification.

In teaching history the underlying question which every teacher must ask is: "How am I helping the child to understand present society; am I leading the pupil to a fuller realization of present institutional life?" By this standard the curricula and the methods of teaching history must stand or fall. In the light of the demands of educational theory, the average high school curriculum in history, with its first two years devoted to ancient and mediæval history, its third year to English history, and the fourth to the United States, shows an emphasis on past ages and a neglect of modern American and European history which well merit the adverse criticism and the scorn with which the progressive historian regards it. Applying the same standard to some of the best school text-books in history, we find an organization based on an equally perverted relative proportion. Fully one-third of these books is devoted to Pre-Revolutionary history; the second third concerns itself with the Revolutionary and the Critical periods, and the early administrations through the War of 1812. The rest of the book studies the country's history through the Civil War, with great respect for details, and sums up the progress of the last forty years in a few pages. Every thinking student of history and political science must quarrel with such an organization which has only tradition to justify it. History is fast changing color. If history is only past politics and past legislation, then the politics and the legislation of to-day are the history of to-morrow. Legislation is now assuming a different character in its attempt to keep abreast of the social and economic progress of the community; it no longer gives itself over to political theory, but to problems of economics, of industrial life and organization, of social iniquities,—to problems of vital human importance. All the questions of corporate organization, of trust control, of commission government, of tariff revisions, of readjustments among economic interest and economic classes,—all these form the politics of to-day. But these problems all have their origin and their development in the last three or four decades of our country's life. History's most vital contribu-

tion toward the problem of social adjustment is lost in the slavish imitation of the traditional disproportionate and distorted emphasis on the past.

History which justifies the past in terms of the present is a dynamic study, a subject living and breathing, possessing a human spirit. The history that is so often taught in elementary and secondary schools, with its glorification of dates, places, names, battles, administrations, is hardly history unless all these are subordinated in an attempt to give the child the steps in the growth of our republican form of government, of liberty, of free speech, of free press, in a word, the progress in the reclamation of the inalienable rights of the sovereign citizen. A school principal, after examining a class in English History, was vexed at the poor results; he stopped the test, and developed for the class the genealogical tree of the second half of the History of England, giving all the rulers, reigns, dates, etc., in proper chronological sequence. At the end he triumphantly exclaimed: "There you have a bird's-eye view of English History." History? No! It was a combination of dead facts and social archaeology, thoroughly static, without life or human spirit. To emphasize all this, and neglect the Magna Charta, Bill of Rights, industrial revolution, growth of representative government, the Chartist Movement,—the mile posts on the road of human progress,—shows an unpardonable lack of social imagination and historic perspective.

McMurry asks: "What knowledge is most worth?" He, too, like the others whom we have considered, bases his answer on his conception of the function of education. Like a faithful Herbartian, he makes character and conduct the final aim of the school and education. What history, with its lessons in civics and ethics, contributes toward this aim has just been outlined; hence it occupies the place of honor among the school subjects. History gives the social content of life, hence it is first; science the physical content, hence it holds second place; but arithmetic, grammar, penmanship, elementary reading, are the formal subjects; they give only the sym-

bols of knowledge, but add nothing new to the intellectual possessions of the race; hence they bring up the rear of the list. History, in the dynamic sense that we have discussed, is the "knowledge of most worth" in the social content of the curriculum according to the Herbartians.

2. *Socializing through Proper Discipline.*—But to know is one thing, to do is something very different. As a result of proper teaching the child may have a comprehensive idea of our social organization, our mutual interdependence; he may know in a general way what is right and what is not, but there is no surety that he will act in accordance with the concepts that we have tried to establish. The child may understand social life, but he may not live it. Thus one may know the history of religion, and nevertheless be ungodly. One may know the laws and technique of music, and nevertheless remain tone-deaf and insensible to the beautiful in sound. So, too, the pupil may have a clear comprehension of our social institutions, but nevertheless be unsocial.

Psychologically, the reason is simple. Action is a matter in the realm of will; comprehension, of the intellect. When we try to instil an institutional sense through the curriculum we are appealing to the intellect primarily, and only indirectly and marginally to the will. Hence there results comprehension, but no guarantee of action. It is evident that we must turn to a second means of instilling the institutional sense, a means that makes the will focal, and seeks its training and control, viz., proper school discipline.

The school must at all times be considered a miniature community. Discipline is therefore its machinery of control, which seeks to make the child realize that he is a social unit, an integral and necessary part of that community, with duties and obligations to his neighbors, with rights and privileges which are safeguarded by social rules and regulations. Does school discipline succeed in inculcating this social attitude in our children? With great reluctance we must admit that, too

often, it falls far short of the mark. The causes are many and simple.

Limitations in the Prevailing School Discipline.—The first reason for the shortcomings of school discipline was suggested in the initial chapter. There, complaint was made that all school rules are blind and arbitrary, without justification in the eyes of the child. Teachers do not explain the need for them, therefore the pupil does not realize that “Do not talk,” “Come early,” etc., are rules made necessary by the social school organization. He does not see that when he disobeys he is interfering with others; if he talks, others cannot listen; if he comes late, he disturbs those who come early. The children do not realize that if there were five or six pupils in a class, coming late would not be a social offense, that talking would be allowed, for it would lead to mutual help; but with forty-five receiving instruction simultaneously, coming late is a social injustice, whispering means only mutual interference and social chaos. Since they see no social justification in these regulations, their obedience becomes as blind and arbitrary as the rules themselves, and must therefore be forced. Character and useful conduct are not results of such government. The conclusion that was implied counseled that the teacher should explain the rules, give reasons for new regulations, so that the child would realize the social necessity of obedience.

A second reason for the shortcomings of school discipline is to be found in the fact that we take a wrong attitude toward misconduct on the part of the child; we consider a child's offense as a personal affront, rather than as a sin against the class. The child is made to feel that it is the teacher who is hurt, that the teacher punishes him in the same spirit in which he himself would take vindictive measures if another child offended him. The class, too, is made to feel that when the teacher punishes one of its members he or she is checking up a personal score. If discipline is to be based on the theory we just mentioned, viz., a force made necessary by the social or community life of the school, then each offense is a sin

against the class, and the class must resent it. A child who is sent out of the assembly hall for misconduct has not offended the teacher. He has hurt the standing of the class in the eyes of the school. A child who is taken out in a fire drill; one who stays away on the slightest provocation; one who is frequently tardy,—all these hurt the record of the class. The teacher who asks in stentorian tones: "How dare you disgrace me?" can hope for no sympathy from the class. She has made the issue a personal matter. She has authority, power, and force which outweigh the child's. The class feels that the fight is uneven enough. Their sympathies go naturally to the weaker side, the culprit. They feel sure that the victory will be the teacher's.

A final reason which explains the failure of school discipline to develop an institutional sense is the misconception of the aim of school discipline to be "continual control of the individual." This is the direct opposite of the end of true discipline. Proper school government never sets up "continual control of the individual" as its ultimate endeavor. If it did, it would make him dependent, hopeless, and irresponsible. The final goal of discipline must be self-control. In the capacity of disciplinarian, the teacher forces the individual into the same rut; day in and day out, she makes the same demands of conduct, of punctuality, of neatness in work, of neatness in attire, until by dint of repetition the child does the proper thing from force of habit, and not because of constant direction from without. Discipline, therefore, must lead to self-management. According to the prevailing notion, a good disciplinarian is one who controls the children at all times, in all activities.

"Order" and "Discipline" Contrasted.—Teachers often confuse "order" with "discipline"; they use them synonymously, as if the terms were interchangeable. By "order," in the technical sense, is meant that condition of class management in which the children are absolutely quiet, the teacher is the undisputed master whose authority is never challenged. It is based on fear, and is maintained by con-

stant unrelenting watching. Every manifestation of individuality is construed as a sign of disorder and at once suppressed. Both teaching and management are carried on with military spirit and precision.

In "discipline," on the contrary, the children do the right thing from a sense of obedience or from force of habit. There is no consciousness of fear, there is no strained effect throughout the class. The children know what is wanted, they do it without receiving every petty order, without constant watching and direction. In a well disciplined class simple privileges may be extended to the pupils. They have a sense of conduct which keeps them within bounds. Children whose behavior has been brought to such a point do not ask permission "to throw waste paper into the trash basket" or "to leave the room." When a convenient opportunity arises they go to the basket on their own initiative; in the meantime they put the waste paper into their pockets or desks. When physical needs make necessary a temporary absence from the room, they do not break the unity of the lesson by hand raising, but quietly and inconspicuously "tiptoe" to the back of the room, enter their names into a book kept for such a record, and then leave the class. When a stranger enters such a room and engages the teacher in conversation, they busy themselves at some unfinished task or begin an assignment for the next day. The apparent absence of the machinery of social control is the chief differentiating characteristic of that condition of classroom management which we call "discipline" as opposed to "order."

A class that has "order" but no "discipline" cannot be given such liberties. When such children come to a teacher who does give them liberties, they break out. Strict "order" as a final end of class government leads to an arrested development. The noise and busy hubbub of well disciplined children intent on their task are far more welcome than the oppressive, stilted silence of the class where "order" is based on fear and maintained by unceasing surveillance. The class that is disciplined is orderly, but the class that is orderly is

not necessarily disciplined. The test lies in the ability for self-direction.

"Discipline" and "order" are relative conditions of class management. It becomes obvious, therefore, that one must always be sure of "order" first. Obedience is a primary social requisite. Hence "discipline," as defined educationally, is hardly possible in classes below the fourth or fifth year. We must not find fault with the primary teacher for having "order" and not "discipline." The fault lies in the advanced grades. The quarrel must be with those teachers of the upper classes who have excellent "order," but seldom change to "discipline," with its self-government basis. They continue to keep controlling the children and deny them the chance of developing self-directed conduct.

Means of Developing Self-Government.—The most effective means of teaching children the art of self-direction thus far successfully evolved are: (1) the organization of clubs and the participation in club life and club affairs, and (2) the organization of the self-government plan in the public schools. In the latter, the social organization of the school reproduces some form of social organization of real life. The school has its mayor, chief of police, health commissioner, police officers, judges, etc. Every teacher is relieved of the responsibility of the children's conduct out of her class. The upper class pupils take care of assemblies, yards, stairs, etc., arrest the nuisances, bring them up on charges before the judge, who sentences them according to a definite code. The child is taught very plainly that an act of misconduct is an offense against the school, for he is punished by his schoolmates. Self-government when tried as a school plan with an enthusiastic principal and cooperating corps of teachers is usually successful. But when the plan is applied to a single class the results are rather unsuccessful. The reason is obvious. With a weak disciplinarian it is well nigh impossible to carry out such a scheme. The strong teacher feels that she can do very well without it. There seems to be no motive that would lead her to adopt it. In the final analysis she, more than the

weaker teacher, needs the influence of some form of self-government.

George Junior Republic.—The principle of self-government receives its greatest encouragement and finds its most successful illustration in the George Junior Republic. The Republic is a colony situated in Freeville, N. Y., within an area apparently not under the jurisdiction of the laws of New York State, except in very serious cases. To it boys and girls between the ages of sixteen and twenty-one are sent for offenses which range from petty theft and mere unruliness to serious crime. Its organization is modeled after the United States, for it has a president, two houses, a judiciary, a constabulary, a jail, a health department, a mint,—all the socially necessary institutions. All the officers are elected by the inmates from their own members. It is a government of, by, and for these boys and girls, the citizen body.

The motto of the Republic is "Nothing Without Labor." To carry out this policy the colony offers work at almost any occupation to its citizens. It has its own money, which has the usual monetary value and function, within its own borders. To earn money for living expenses a boy or girl must work on the farm, or in the houses, as porter or chambermaid, in the bakery, in the printing or the carpenter's shop, at blacksmithing, etc. The workers are paid a per diem rate by the Republic or by a contractor, a citizen, himself committed to the colony, but who has through thrift and economy saved enough to rent land, build a store, and open a restaurant or sundry business of his own.

Lodging can be had for prices varying from ten to twenty-five cents a night, depending on the style and comfort that is desired. Meals can be had at the same variety of prices, according to the Epicurean tastes of the citizen. A boy or girl, admitted, is given employment, but he or she need not work. Food cannot be had without money. Lodging must be paid for in advance. The person who refuses to work may loaf and enjoy himself, until he becomes hungry, then he begins to think. At night he has no bed and before he realizes

the full force of the predicament the Republic policeman arrests him for vagrancy. He spends the night in a disagreeable jail and the next day the judge sentences him to forced labor in the jail yard until he has paid off his fine and can satisfy the authorities that he will keep fed and housed for a minimum time. Jail prices are low and jail work hard; he learns to do half the work for double pay as a free man and to keep out of the policeman's path. If a boy or girl steals, the victim calls for the police at once. He worked for his money honestly, he resents losing it in such a manner. If a person shirks while on a job, the contractor discharges him; he can get better workers and make more; he is responsible for the economical conduct of his office.

The basic idea is contained in the social conception. Our own society is so large and unwieldy that an act against society is hardly felt by the individual citizen. Theoretically, an injury to one is the concern of all. The George Junior Republic is so small that social interdependence is felt. The Republic tries to upbuild moral wrecks by making them live social lives and feel the consequences of unsocial conduct.

The skeptic as well as the intensely interested student of education and sociology asks, "Has the scheme succeeded? Is it proving worth while?" The nature and the scope of the influence of the George Junior Republic can only be suggested in the limited space that is available. A mere affirmative answer to these questions does not suffice. One must actually see the changed spirit, the new life, the reclaimed social wrecks, to appreciate the moral force of this self-government colony.

V. The Religious and Moral Factor

Religion the All-controlling Factor in Education of the Past.—The racial inheritance would hardly be complete without a knowledge of the great religious forces operative in its growth. During the formative stage of society, religion was the all-pervading influence in life. It encompassed and con-

trolled its political, economic, industrial, and social phases. No phase of civilization escaped its control. Every school curriculum was first religious, then educational. The school was only the specialized institution of the church. Its aim was to spread and perpetuate the doctrine of that religious denomination which supported it. Since the church was its parent, the school breathed religion in its curriculum, organization, and spirit. Comenius, who marks the beginning of modern educational thought, asserts that it must be the aim of education to make man live in the happiness of God and in harmony with His teachings.

Waning Influence of Religion in Education.—But with the advent of the eighteenth and the nineteenth centuries the influence of religion in education has gradually waned until it has only a mere vestige of its former power. These changes were brought about by a variety of causes reaching into every phase of human life. The church, like any other great institution that depends upon the good will, the inspiration, and the energy of man, found that abuses were inevitable. Its gospel was often misinterpreted and misapplied, its inspiration was often dissipated in the extravagances of fanaticism. The growing spirit of independence in politics is reflected in other realms. Religion was bound to suffer, for its basis of faith implies the subordination of individuality to unquestioned authority. With the separation of church from state came a wide-spread belief that education is a secular function, which the state must discharge. With the change of sovereignty from the few to the many, the controlling power of religion in education was undermined. In addition to all these debilitating forces, religion had to contend with the growth of science and the popularization of realism in education. Religion often stubbornly opposed these, remained static, and refused to acknowledge the onward march of civilization. It paid dearly for its shortsightedness, losing in prestige and power.

Ethics Teaching the Only Religious Teaching in Public Education.—The only religious education that we tolerate in

the public schools of our country is the form that knows no denominations but teaches what is common to them all, the ethical basis with its prescriptions for individual and social conduct. These are interpreted by teachers so that the lessons teach, not toleration with its mean spirit of condescension, but respect for all belief.

Systems of Religious Education.—In this country, free from traditions rooted in mediævalism, it is not difficult to throw off the yoke of denominational religious education in the public schools. On the continent, these conditions are too deep-rooted. Elementary education, there, often shows a more intimate association with religion. Where religious education is given with secular elementary education, one of two common practices is followed. The first system, popular in many sections of England, provides for periods when the regular school schedules are set aside and the children are sent to different classes assigned to the respective denominations. Here the children receive regular systematic instruction from their religious leaders. Being so closely allied with the public school, the religious teachers follow a curriculum which corresponds and correlates with the geography, history, civics, and literature of the various grades. This method makes unnecessary the Sunday School, an institution peculiarly American. At a recent meeting of Sunday School teachers there was a general unanimity of opinion that the results were far out of proportion to the time and energy spent by the teachers. A prevailing remedy that was offered declared that if the course of study were systematized and well graded in the Sunday School, so that it ran parallel in its development with the kindred school subjects, the children would be more interested and the teaching would be more effective.

The second system of incorporating religious education into elementary public instruction is carried on by state subsidies, which take the form of money grants or other material allowances. These varied forms of support are given to the schools established and conducted by the prominent denomi-

nations. The state maintains an indirect supervision by prescribing a minimum course of study of non-religious subjects. This system justifies itself on the theory that education is the social debt which the state owes its future citizens. The religious denomination which assumes the responsibility of this function should not also relieve the state of its legitimate expense. Many of the older countries of Europe gave its children an education through such an organization. It was a prevailing system in France prior to 1902. Recent serious disturbances between the French government and the clericals were precipitated, if not caused, by attempts on the part of the former to end this direct control of secular education by the church.

Neither system meets with more than local or denominational approval in our own country. There is a very strong and positive conviction that no scheme that can possibly be devised will prove popular for so heterogeneous a population as ours. The prevailing opinion regards the child as too immature to be taught religion in its true sense. All that seems possible is to appeal to the child emotionally, to his faith, his fear, his love, so that he becomes receptive. When the child is young he has only the religious feeling, not the religious comprehension. This emotional background, this emotional receptivity for future religious conception of a particular denomination, is too delicate to be entrusted to a public institution. The church and the home must assume this responsibility.

Lamentable Ignorance of the Bible.—But with this divorce of religion from education we have suffered an important loss,—the knowledge of biblical lore. The importance of the Bible as a literary standard and as an aid in the comprehension of the allusions and symbols in art and literature is too obvious to need elucidation. The secondary school teachers and college instructors can testify to the prevailing ignorance of biblical knowledge. It would therefore be a very useful service to education if a supplementary reader were written bearing the stamped approval of all denominations so that it

could be used in the public schools as a mere literary and cultural text. The numerous difficulties arising from petty objections of overzealous religious leaders have always made impossible the successful realization of such hopes.

Another inestimable gain from such a biblical reader would be a knowledge of the history of ancient culture. He who does not know the names of the leading gods and goddesses and their immoral cohorts of Greek and Roman mythology is considered uncultured in the extreme. But no reflection is cast upon him whose ignorance of biblical lore, biblical personages, and incidents is truly abysmal. Not one student in a class of forty-five college seniors could characterize the Prophets, nor could name five of them, nor give a rational and comprehensive idea of their time, their message, their influence. All of them could talk freely of the deities of classic myths, all were proficient to an almost alarming degree in the knowledge of the lasciviousness of Zeus and his under-gods. But not one knew of Jeremiah, Isaiah, Hosea, prophets whose religion Christ loved and whose inspiration he sang.

What Knowledge Is Most Worth?

Which of these factors shall we elect as the "most worth"? These five elements of the social content of the curriculum summarize the complete social inheritance of the race. For a harmonious, proportionate, cultural, and liberal view of the social environment, all are necessary. To emphasize one at the expense of the other means intellectual astigmatism. No one phase of the social content of the curriculum can be given a monopolistic place. In the socialization of the individual through the curriculum there is no absolute answer to "What Knowledge is Most Worth."

But one must not champion the other extreme and assert an equality among the separate elements in the curriculum. Because no one element is the most important, it does not follow that one phase is not more important than another.

There is a relativity of knowledge, a varying degree of importance of subjects; but this is determined *not for the individual by the school, but by the individual for the school.*

How Far shall Adjustment Extend?—That subject is the more important for any individual which will be more useful to him in the life that he is to lead. Since the school does not know the chosen path of each, it becomes impossible to say positively what knowledge is worth more in the course of general education. To what extent, then, shall the school aim to adjust the individual? Should the child be adjusted to every possible condition? Will it meet every possible condition? Should every individual be given the same adjustment? Will every individual meet the same kind of surroundings and need the same kind of adjustment? What then must be the nature of the adjustment which the school is to give; where shall it lay its emphasis?

In an earlier connection it was concluded that education must start on the basis that all are unequal, rather than equal, that each individual comes into his environment, strong and favored in one direction, weak or handicapped in another. From a mere cursory view it seems as if there were a social division of labor, as if each were naturally shaped to fit into a particular niche. Hence it was concluded that each individual must be trained to adjust himself to that environment and social function for which he seems best suited by nature's gifts. The student may go a step further and say that it is the duty of the school to discover these special aptnesses and train the pupil accordingly, so as to insure to each individual the realization of his best gifts and thus make him most useful in his society. Dewey expresses beautifully the same social desideratum of education when he says, "When the school introduces and trains each child of society into membership into his own proper little community, saturating him with a spirit of service and providing him with effective instruments of self-direction, we shall have the surest and best guarantee of a larger society which is worthy, lovely, and harmonious."

But, to train each individual according to nature's indices, is only an ideal to-day for the elementary school, but like all ideals, though incapable of immediate realization, it serves to give direction to sincere endeavor. Such an ideal can be approached only when there is a perfect articulation and coördination between the home and the school. In the extremely limited school time, the teacher cannot study the child nor make positive plans from a temporary and inadequate knowledge of its nature. In the school the child is more or less conventional, restrained, and "on his good behavior." The child is constantly displaying "his company manners." At home the same child is natural, his desires are expressed, his impulses are often acted out freely. The parents thus have the opportunity of studying the child and noting nature's tendencies. It is they, not the teacher, upon whom the responsibility finally rests. But with the prevailing ignorance among parents in some sections of our large cities, the school can hope for little more than the present lack of coöperation and support and the continuation of the same injudicious interference.

Another great obstacle in the path of the realization of this hope is the development of our present mass system of teaching. Because of the world-wide movement toward concentration of urban population, city education is now a great unwieldy system. Classes are large and individual attention well-nigh impossible. Mechanical devices and schemes of every sort are being introduced to make all pupils work simultaneously and similarly. A general standard is adopted to which all pupils must measure up. The teacher brings one method of instruction, one set of illustrations and questions, one mode of presentation for the whole class. Those to whom this one point of view does not appeal must fall by the wayside. The urgent problem of school management to-day, is how to make class teaching consistent with the highest interests and needs of the individual, so that his personality will be given free sway to assert and adjust itself.

Class teaching based on this modern tendency, which

neglects the individual's peculiar needs and seeks to substitute general methods applicable to all, must necessarily plead guilty to four serious indictments. First, it is stultifying, not invigorating. Instead of encouraging each child to show its true self and catering to its individuality, we curb these, and repress what is most vital and what should be expressed. The school has a common denominator and demands that each child reduce itself in terms of it; the problem is intensely aggravated because it is the least common denominator which is usually adopted; the inevitable result is reduction descending. A second indictment therefore follows—our education is passive, not active. This is inevitably followed by a third, that education becomes imitative rather than initiative. Only as we encourage expression of personality, cater to each sacred self, allow every child to do the task in his own way, do we find the individual assuming the rôle of initiator. Because we teach masses we demand one set solution for a type of problem, one method of arranging papers, etc. The child may know a shorter process, a more convenient arrangement, but the sacred regard for uniformity curbs personal preference and forces an imitation of the common standard. True, the child cannot have his way in all things. It is part of the school discipline to train in the control of the ego; but in our system of "crowd instruction" this control degenerates into repression of individuality. Education must finally plead guilty of being authoritative rather than self-assertive, opposed to the very nature and function of the educative process.

In the final analysis the present organization does not even cater to the needs of the average child, but rather to those of a very small minority. In studying the need for vocational training it was noted that only five per cent. of the elementary school graduates in this country go to the secondary schools. We must always keep in the focus of our field of vision that vast army of children who leave long before the completion of the school course, whose fifth year marks the termination of a "liberal" education and ushers

them into an industrial life. Despite the realization of this disagreeable fact, the traditional organization of education persists. In sublime indifference to this realization, elementary school curricula are shaped to prepare children for the secondary schools; high school courses usually prepare for the college. Education is not only a social process, but a social function; it must faithfully endeavor to minister to the needs of the vast majority whose impulses are thoroughly practical and manual rather than speculative and mental.

In our modern educational systems, the center of gravity is too often placed in the curriculum, in the method, in the teacher, "but not in the child, in his instincts, and activities." For this reason we welcome any plan to teach by groups, to form special classes according to ability, gifts, or handicaps of the children, to curtail the elementary school to six years and reorganize the seventh and eighth years, so as to prepare those children who leave school for their specialties in business or industry, and the others who continue the academic studies for their work in the high school. All these are only manifestations showing that "modern educational ideals seek to make the child the center of gravity in school life" and organization. These are attempts to place education in that condition known in physics as stable equilibrium.

SUGGESTED READING

COURSES OF STUDY, *Elementary and High School Systems of Leading American Cities.*

BOLTON. *Principles of Education*, Chaps. 6 and 7.

GEORGE. *The George Junior Republic.*

HORNE. *Psychological Principles of Education*, Part IV.

RUEDIGER. *Principles of Education*, Chap. 10.

SEARCH. *An Ideal School*, Chap. 7.

THORNDIKE. *Principles of Teaching*, Chap. 13.

McMURRY. *General Method*, Chap., "Relative Worth of Knowledge."

SPENCER. *Education*, Chap., "What Knowledge Is Most Worth."

BUTLER. *Meaning of Education*, Chap., "What Knowledge Is Most Worth."

PART IV

EDUCATION AS MENTAL ADJUSTMENT

A. THE INSTINCTIVE ASPECT OF THE MIND

CHAPTER X

SELF-ACTIVITY AND MENTAL DEVELOPMENT

Meaning of Mental Development.—The pivotal point in the psychological discussion of education is the answer to the question, "How does the mind grow?" But before we attempt an answer we must understand clearly what is meant by mental growth. Education has often been defined as mental development. This reflects the true nature of our problem. Development means an unfolding of something present but not visible to the senses. Mental development implies that the mind comes into the world, not a blank, but a mass of possibilities that can be brought out. The development must therefore occur from within, not from without. The mind grows because the latent powers already within the mind become manifest. Education is hence an evolutionary and never an involutionary process.

This is, therefore, a direct contradiction of the old "Blank Paper" theory of the mind. The child's mind was regarded as a perfect blank at the start of life, ready to receive impressions from without. The followers of this theory suggested the analogy of a clean blotter which gradually absorbs the markings of writing. Locke, the leading sponsor of this theory, holds that the greater the number of impressions and facts that is absorbed by any individual, the greater is his fund of knowledge, and hence the higher is the intellectual development which he attains. This led to a conception of education that is known as the "Acquisition Theory." The mind was regarded as a void to be filled. Multiplicity of facts, not the quality nor the method of their acquisition, was the aim in teaching. We often hear a teacher complaining,

"I have filled them with grammar and yet they know nothing." Such a teacher conceives education as an involutionary rather than an evolutionary process. We must remember that, strictly speaking, a teacher cannot impart knowledge; he can only occasion it by arousing the proper activity in the child's mind. All knowledge is the result of the child's own exertions. We ask questions, appeal to the imagination, present objects, etc., in the hopes of arousing this activity in the child. But, unless the child responds, all the teacher's efforts are futile. The teacher who forgets this basic principle, but regards the mind as a receptacle to be filled, is usually engaged in a "hammering-in" process of dull memoriter drill, constantly neglecting appeal to thought.

The crudity of this view stands out in relief when compared to its modern successor. To-day we regard the mind as a germ, or seed, containing in embryo form every possible activity, capable of showing every mental phenomenon, each awaiting its proper cue or stimulus to make itself manifest. The mind is the source of its own growth. It imprisons in a compact and concentrated form an infinite amount of potential mental energy which, at the proper stimulation, becomes kinetic energy. This pent-up energy, constantly changing into power when the proper cue is given, is called self-activity. Education is only a continued process of arousing this self-activity, of freeing this energy held in check.

A second theory that we shall not accept is Spencer's and Taine's "Mind Stuff Theory." Both these educators presuppose the existence of a peculiar psychic unit, elementary ideas, which they call mind stuff. They argue that, just as we divide and subdivide the complex physical brain until we come to a single cell, so, too, we can divide and further divide thoughts and complex ideas until we come to a simple, elementary single idea. The more the brain cell is used, the larger and more powerful does it become. The more we think and reason, the more potent and the richer do our simple ideas become.

Seneca, who wrote ages before Spencer, spoke more wisely.

He said, "Man's mind is not clay which the educator can mold at will, but a plant, having its individual nature and form in the seed and capable of being cared for by him as a gardener." A seed contains an invisible tree, with its massive trunk, spreading branches, and countless leaves. The gardener cannot change the nature, nor the form, nor the character of the tree. He applies the most satisfactory physical conditions, of temperature, moisture, and sunlight, and the latent possibilities of the seed emerge. The force which makes the seed manifest its capabilities comes from within. It is the seed's self-activity which causes it to blossom. So with the mind; in the new-born infant are wrapped up all the faculties and all the powers that can be developed in the course of its life. The force within that stirs these dormant possibilities and makes realities out of potentialities is self-activity. The answer to our original question, "How does the mind grow?" is hence "Through its own activity from within, through its own strivings and struggles."

Education vs. Training.—With this conception of mental growth we conclude that man alone can be educated in the true sense and in the strict meaning of the term. An animal can be trained but never educated. The distinction lies, in the main, in three points.

(1) In education we seek to lead the individual to a realization of the worth of things, their ultimate need and use, hoping that his action will become self-directed toward a goal consciously chosen by him. In the teaching of geography and history we are constantly endeavoring to arouse such interest in the subjects that the child will read whatever is available on the library shelf. In the literature lesson we hope to create such an appreciation that the child will take a delight in reading, although no assignment is made by the teacher. In teaching nature study the aim is not, as we often suppose, to fill the child's mind with facts of trees, leaves, stems, roots, etc., but rather to inspire a love for nature, an appreciation of its beauty, so that even the city child may look up to see the splendor of the sky, may voluntarily seek the green fields,

the flowered meadows, the forest and its birds, all of nature's glories. But how different with the animals! When hungry they seek food, when cold and sick they search for shelter. The action and the goal are always determined by the pressure of necessity. Even the circus dog waits for the cue from his master and goes through each execution exactly as directed. In training we have a goal and its realization determined for the individual. In education we seek that level of life in which the goal is determined by the individual himself.

(2) Education seeks to make each individual self-conscious. It tries to make each child cognizant of the powers within itself. For only as we become conscious of the powers within us do we become best fitted for our destined life-work. Knowing our capabilities we realize that we can accomplish bigger and better things, that the horizon of our lives may be widened. Or we may see that we are attempting what we cannot achieve. The animal that is trained, that has a goal forced upon it, is conscious, not of itself, but only of the outside world. It is ignorant of itself, the vital factor in life, knowing, however, what is external to it.

(3) A third point of difference is one that is purely psychological. In training we try to establish such an association of facts in the mind that conclusions are prompted mechanically through associative memory or association by contiguity. The explanation is simple. Certain facts happen to follow one another in time and space. The mind notes the sequence and is impressed by it. For example, we repeat a, b, c, d, and not b, a, d, c; there is no reason for the order except that that is the traditional sequence. We therefore train a child to repeat the alphabet. A child tells us glibly that "the capital of Maine is Augusta on the Kennebec." Here, too, is an association of facts without reason; the names were seen together on the map or heard repeated by the teacher, and the mind of the pupil associated them in that order. A pupil may tell us, in a mechanical way, that the "climate of Labrador is characterized by cold, bleak winters,

and short, mild summers." That, too, is a mechanical fact learned by the child without comprehension of cause and effect. Such children are trained in geography.

But, when we try to associate these facts in the mind because there is a reason, a basic similarity, a fundamental cause, then we have association by similarity, rational association, characteristic of education, not training. Thus, the child who is asked the climate of Labrador, and who proceeds to examine the map to find its latitude, altitude, prevailing winds, distance from the sea, neighboring ocean currents, etc., will come to the same conclusion. If he remembers this conclusion it will be due to a rational, a logical association, not a mechanical or accidental one. Such a child is educated in geography. One teacher puts on the board, "231 cu. in. = 1 gallon." The children learn the statement because of their faith in the teacher's knowledge. They are trained to the fact. Another teacher constructs a box 7 x 11 x 3 inches, fills it with sand, and empties the contents into a gallon. The children find the volume of the box, 231 cubic inches, and conclude that, since the box of sand filled the gallon measure, a gallon contains 231 cubic inches. In this second method the children are educated to the fact. In the one case we impose the fact, in the other we present such conditions and questions as will stir the minds of the children to find the fact for themselves. Hence, we have training, mechanical association, association by contiguity in the former case, and education, association by similarity, by like causes and corresponding reasons, in the latter; minimum appeal to the child's self-activity in the first method, a maximum appeal to the mind's activity in the second.

Conclusions of Self-Activity for Teaching.—Self-activity shows itself in many forms of continuous expression; this is known in psychology as the "Stream of Consciousness," a chain of successive mental states. The doctrine of self-activity emphasizes the teacher's need of controlling the stream of consciousness. To illustrate: in listening to a talk there must be an adjustment of the ear to what is being said, and

of the eye to what is being shown. Unless we recall our past knowledge of the subject, the lecture has no significance,—memory is introduced. If we fail to judge, compare, analyze, and criticize the subject-matter presented, the various points will not become part of us,—reason is necessary. Thus the intellect, in all its forms, must be occupied. But what is said arouses pleasure or displeasure,—the emotions are hence brought into action. To keep our attention riveted, to make the mind concentrate and shut out extraneous ideas, will power must be brought into play.

We see, then, that our psychic life is a composite of a number of forms of consciousness. At each moment feeling, intellect, and will commingle freely. First one predominates, then the other. Each subject of study will decide for the teacher which of the mind's activities will be made central or focal and which marginal. In listening to an illustrated talk on Switzerland imagination is focal, reasoning marginal; in following a talk on self-activity reasoning is focal and imagination marginal.

The teacher must, therefore, decide which of the forms of mental activity his particular subject demands and then try to direct the child's self-activity accordingly, otherwise there will be a diffusion of the mind's energy. Thus, if the lesson in history happens to be on a battle, the teacher must make imagination focal. To accomplish this we do most of the talking, give a host of vivid details, and lay special emphasis on the tragic elements. But if the topic happens to be the results of the French and Indian War we want thought and reason in the focus, but memory and imagination on the margin. With this end in view the lesson proceeds with less telling and the burden of work is put on the children; the whole topic is developed by a series of well-ordered questions. It is our common experience that as soon as we start on a protracted verbal explanation of effects the pupils are gradually lost to us. This is due to the fact that we have allowed the stream of consciousness to set in, the activity which is to

be central and uppermost to slip into an insignificant position in the field of consciousness.

A second great help that this conception of self-activity can render the teacher is to reemphasize what we neglect through overfamiliarity, viz., that there can be no true reception of knowledge without a reaction, no lasting impression without a correlative expression. Paradoxical as it may seem, it is nevertheless true that the expression will cause the impression, because then only are we utilizing the self-activity and making education evolutionary. No fact becomes part of the mind if it is merely admitted and interpreted. The mind must be given an opportunity to work it "over" and work it "out" as well as "in."

A teacher gave an excellent lesson on Burgoyne's Campaign. The exposition was clear, the steps logical, the sequence gradual and easy, the whole narrative exceedingly interesting to the children. When the story was over the teacher dictated a short summary of the main facts, dates, battles, personages, objects, and results of the campaign. The whole lesson was an attempt at impression, and the children were relatively inactive; their minds were in a state of passive receptivity. The direct instruction being over, one would naturally expect the reaction from the children, their expression of the impressions. How much better would the lesson have been if the teacher had asked the children to write the summary, or to make a map of the region and indicate the progress of the campaign? Children enjoy the expressional side of a lesson as much as the impressions given by the teacher.

The usual excuse for not allowing the children opportunity to react upon impressions is lack of time. Granting the legitimacy of the excuse under the pressure of the crowded curriculum, the teacher might have asked the pupils to think of five of the most important points in the lesson. This would have necessitated a rapid review of the whole lesson, quick decisive judgment of the relative importance of facts, and deep thought for the final choice. This opportunity for an

expression would have done more to deepen the basic ideas than the copying of the teacher's outline did. There is no time for this active work, but plenty of time to scribble a summary, thus completing a whole period in which the children are using a minimum amount of self-activity. In addition, this procedure reduces a lesson given orally by the teacher, a lesson full of spirit and enthusiasm to a stupid, lifeless synopsis of five lines, which is memorized and recited the next day. It is our personal experience that, when we know a secret which we are enjoined from telling, we feel an irresistible craving to tell what we must not, to give expression to what should remain an impression. The child experiences the same longing to tell what was told him, and the more interesting the lesson the more urgent is this craving for mental reaction. It is safe to become suspicious of the efficiency of that teacher whose work in geography and history necessitates the dictation of finely worded compact summaries.

All the school subjects abound with examples of this need to provide exercises which call upon the available self-activity of pupils. In studying, the same law holds true. We read a paragraph, understand it, follow sentence after sentence, until the end is reached. Unless we review it and retrace its development the thought in the paragraph will not become our permanent possession. James spoke wisely when he said, "It is the motor reaction to any impression that will clinch it in consciousness"; this is only another and better way of saying what we said: we learn only as we put forth our own effort and activity.

Advantages of Requiring a Mental Reaction.—To require a mental reaction means to reap three advantages in teaching:

1. *It Makes Knowledge Exact and Precise.*—Ideas and thoughts are fleeting. "Easy come and easy go" seems to be the law. The person who is always absorbing knowledge may be mistaken in his comprehension of it. Let him give expression to his impression by explaining it to others, by writing it out, or by diagramming it, and many imperfections in his

understanding of the facts appear at once. Here he is not quite clear, there he did not foresee a possible exception. "We learn as we teach" is an old adage; it is true because, as we attempt to give expression to what we think we know, we often realize that our knowledge is imperfect and ill-digested. The lecture system of teaching is the poorest method yet devised because it allows the student no opportunity for mental reaction.

2. *For the Teacher, Expression by the Pupil is a Test of His Knowledge.*—No teacher can proceed beyond a certain point unless she makes sure that all misconceptions are eradicated. By constantly requiring pupils to give expression to the impressions that we are trying to establish, we ascertain the pupils' misconceptions, and remove them before continuing the development of the topic.

3. *It Gives the Child a Feeling of Self-reliance.*—In requiring an expression we make a direct appeal to the child's ability. The child is thrown on his own resources and must work out his own salvation. We not only show the child what he can do, but also make him interested in his own capabilities.

Summary.—From the point of view of self-activity, the teacher is therefore not the imparter of knowledge but only a guide, a director of the energy and activity which the child has to offer. His first duty is hence to map out the work. The second function of the teacher is to supply the motive, to bring all those means and devices to bear which will arouse the pupils' activity and call upon the proper mental powers in the stream of consciousness. He must decide whether the child shall work from a sense of fear, of love, of interest, of need, or of desire to win the approbation of his parents, teacher, or fellow-mates.

Laurie tells us, "The child attains knowledge by taking it, not receiving it; he instructs himself. The teacher is only a conductor, a coöperator, and a remover of obstacles." Pestalozzi, speaking in the same strain, says, "Education is only a continual benevolent superintendence."

SUGGESTED READING

BOLTON. *Principles of Education*, pp. 690-704.

JAMES. *Psychology (Briefer Course)*, Chaps. 8 and 11.

Talks to Teachers, Chaps. 2, 3 and 5.

CHAPTER XI

INSTINCTS

Meaning of Instinct.—The inherent power of the mind which makes for its own growth and development, viz., self-activity, is continually manifesting itself in various forms. Thus we find that every child displays curiosity, an expression of self-activity which shows his inborn desire for knowledge, which leads him to destroy objects in order to better understand the hidden forces at work. He shows a spirit of constructiveness which leads him to put things together, often to break things apart in the hope of reconstructing them. Emulation is another form of the self-activity which causes him to exert great effort in order to excel. Love of ownership leads him to collect stamps, coins, and various objects. Fear, pugnacity, shyness, are some of these additional forms of self-activity that we call instincts, inborn tendencies to act in such a way "as to produce certain ends without foresight of these ends or training in their performance."

The life of animal forms below the human level is completely controlled by instinctive impulse. The beaver builds his dam in the same way at stated seasons and under similar conditions. Birds begin their migrations as the changing seasons come and go, with no force in their lives consciously dictating this mode of self-preservation. Insects continue the same form of life, the same organization, build the same nests in similar locations without special training for these ends. The squirrel herds his nuts, the dog buries his food. Each blindly provides against future want. The number of instincts in man is far greater than that in animal life. Chief

among human instincts we find: sucking, clasping with fingers or toes, gestures, imitation, emulation, rivalry, leadership, pugnacity, talking, sympathy, expression in words or in deeds, construction, curiosity, fears of all kinds for the unknown—for darkness and for elevations—play, shame, jealousy, sociability, love—a host that defies detailed enumeration.

Origin and Cause of Instincts.—What is the cause of this persistent, universal craving toward certain ends? When an instinct is aroused we can always foretell its result. A child will invariably reach out for a bright light and recoil from an object that radiates heat; if we fall we invariably clutch at the air; if an uncouth object appears a feeling of fright and helplessness ensues. The biologists explain that all these instincts reproduce life's activities somewhere in the race history. They tell us that man, living in the tree, fell very often; he broke his fall by extending his hands and clutching at the limbs of the tree. Hence, we clutch at the air in falling. Early man seldom ventured out in the dark because there was no means of detecting danger lurking near; hence we still fear the dark. In very young children we find remarkable mobility of the toes and of the front part of the foot. If we place a pencil below the toes the foot instinctively attempts to clutch it. This, the biologist tells us, is a relic of the dexterity of our toes when the trees sheltered us. Jack London, in his "Before Adam," tells us that, in all our dreams of falling, we never dream that we strike the ground. Why? Because our ancestors who fell while asleep always caught themselves and did not complete their fall. Those who did not succeed fell to the ground and were dashed to pieces. This may be fanciful, but it illustrates the commonly accepted theory that the experiences of our ancestors were conserved and handed down to their progeny. An instinct, then, is an inborn inherited nervous co-ordination, an inherited habit of action.

Nature of Instincts.—All instincts show the same definite characteristics in the final analysis. Chief among them we must enumerate the following:

1. *They Are Reflex Actions.*—From its description and definition an instinct must be spontaneous; it shows no direction and no forethought. We receive a certain stimulus and the necessary action follows without our conscious interference. An act which follows immediately without the intervention of consciousness is reflex by nature. Instincts, hence, come under this head.

But, psychologically and educationally considered, reflex actions are not synonymous with instincts. A reflex is non-voluntary, controlled by the lower brain centers, and follows as the result of a definite stimulus. Thus the entrance of a foreign particle in the eye produces the reflex blink. In instinctive actions, on the contrary, the behavior is more general, it involves a control and direction of the higher brain centers, and follows from stimulations that are internal as well as external. An analysis and comparison of such reflexes as blinking, or sneezing, with any instinctive action in our preceding list, will not only illustrate these differences but will also serve to show definitely that a fine line of demarcation is impossible. Herbert Spencer insists, therefore, on defining instinctive activity as "compound reflex action."

2. *They are not Individual Peculiarities, but Are Characteristic of an Entire Class.*—At a given age all children that are normal may be expected to manifest the same instinctive acts and desires. For this reason a knowledge of human instincts is exceedingly helpful to the teacher. Knowing the instinctive life of one child we can, with a high degree of safety, plan for governing the instinctive impulses of all.

3. Another common characteristic of instincts is that there is *never conscious forethought of a useful end*. Common sense almost rebels at such a conclusion. Instincts undoubtedly give better control of environment. "Have they, therefore, no conscious useful aim?" Science shows clearly that such is undoubtedly their true characteristic. A dog living in plenty will continue to hide bones; entering a dark room continues to frighten us, despite our assurance of com-

plete safety. Certain birds sit on china eggs and guard them zealously, bestowing maternal devotion upon the artificial substitute. These instances show clearly that there is no foresight of a useful end.

4. *All Instincts Aim at the Perpetuation of the Race and the Promotion of Its Welfare.*—An instinct leads us to avoid what is injurious, to neglect courses that are inevitably detrimental to our well being. The dog instinctively shuns food that will make him sick. The instinct to appropriate things, to lie, to deceive, etc., are bad morally but not biologically because, in an animal or savage society, the cunning and crafty will survive as surely as the mighty. So strong is the characteristic of self-preservation that every other instinct may often become subservient to it. Thus, the story is told by Kirkpatrick of a woman who began wading into a stream in an attempt to commit suicide. She was made to retreat when a gun was pointed at her with the threat that she would be shot unless she returned to shore. Instincts of bullying, pugnacity, jealousy may be undesirable from our modern ethical point of view, but they are none the less biologically good. They promote physical safety and well being.

Education of Instincts.—For these reasons the old conception of instincts regarded them as characteristic of the lower animals and made them the cause of all low and vicious acts of mankind. Modern education recognizes that instincts characterize all forms of life, especially of man, whose fund of instincts is far greater than that of any other animal. But, since the existence of the lower forms depends almost exclusively on instinctive actions, their instincts are more definite and more assertive, whereas in man they have been modified by reason, environment, acquired habits, and educational influences. They are nevertheless positive and potent forces, too deep-rooted to be neglected or suppressed at will. The problem of education is one of organization rather than repression of instincts; it tries to do this in one of three ways.

1. *Through Disuse.*—It is a biological fact that instincts may atrophy and finally become extinct, leaving hardly any trace of their former power through a process of disuse. A duck kept on dry land and denied all opportunity to swim will, if immersed in water for the first time, scramble out as fast as possible. The savageness of the dog, the cat, and of other domesticated animals is lost through life with man and an environment which makes it an undesirable asset. We can employ this same method in education. This is the teachers' or parents' means of combatting an instinct. They try to prevent the occurrence of those circumstances which will allow the expression of the instinct in question. Thus the child whose instinct to be cruel leads him to torment a dog should not be given a dog; if he has the habit of taking things that do not belong to him, do not leave things about. We can predict, with a fair degree of certainty, definite instincts in a child; hence we must guard against thrusting the child into such positions as are likely to call up these instincts. The teacher who entrusts her keys to the desk and supply closet to a boy, is not doing what is fair and just to the child. A pad, a ruler, a compass, are part of a boy's cherished treasures. He takes these freely despite his excellent conduct in other situations. To leave a purse or a watch on a desk or in an open drawer with a class of poor children is almost immoral, for we are arousing the very impulses that we are trying to suppress and weaken. After an examination in arithmetic we note an unusual tendency to talk. The children have their answers on slips of paper, and, in their anxiety to compare results, they cannot contain themselves. As soon as the teacher turns her back sly whispering and exchanging of papers occur. It is therefore advisable to give the children a whispering period after an examination. The tendency to whisper is removed, the disciplinary problem eliminated, and the child is spared from doing surreptitiously what he can do openly. But merely not using an instinct does not guarantee that it will die out. Merely imprisoning a person with criminal impulses gives no assurance that the in-

instinct will be curbed. It may break out with redoubled vigor when an opportunity finally presents itself.

2. *Punishment* is another means of controlling instincts; but it is likewise limited in efficiency. If the instinct is weak and the child meek and afraid of pain or displeasure, this method may discourage the impulse in question. But, usually, writing five hundred times "I must not tell a falsehood" will not cure the instinct to lie or to exaggerate; nor will a box on the ear be an effective remedy for this failing. When the punishment suffered is a direct and natural consequence of the child's act, the child associates the offense with the punishment; when the temptation arises in the future the inevitable consequences leap up in the mind and the child may desist. Punishment as a means of curbing instincts should be used only when it leads to such an association, because then the impulse to refrain comes from within. In such a case punishment is even better than the first method, that of disuse.

3. The truly educative means of curbing and controlling instincts is by *guidance* along proper lines and *substituting worthy for unworthy motives*. This method realizes that repression is not only bad but even impossible in most cases. An instinct is an inborn impulse with all the force of innumerable ages. It is too powerful and permanent an element in conduct to be obliterated. The instinctive tendency must therefore be retained, but it must be so guided and directed that it will express itself for ends that are reasonable and desirable.

A few practical applications may make evident the educational merits of this means of guiding instincts. If a child is quick-tempered, all punishment for showing anger is useless. Attempts to keep from crossing him and arousing his displeasure are not always possible. Let such a child's temper be aroused at a mean act. To show one's temper in such cases is almost a virtue. After this legitimate anger has expended itself, reason with the child and show the difference between justifiable and unjustifiable anger. If a child is

destructive, we may utilize such an instinct in the laboratory, in the study of flowers, in an analysis which teaches what is useful. The destructiveness of youth is only a form of the instinct of curiosity.

The collecting instinct is often so strong in children that it is almost a mania. What boy's pockets are not filled with materials ranging from mere playthings to cord, nails, bits of wire, rubber bands, and buttons; Tom Sawyer's collection included a dead mouse. Librarians will testify that children are constantly copying names and addresses from the pages of advertisements in the magazines, and sending postals to those that offer a pad, a ruler, a small notebook free of charge. In each case the article is not worth the postal, but the child feels that the pleasure of satisfying an instinctive craving justifies the outlay. The teacher can utilize this instinct by starting a class-room museum and enlisting the children's interest in collecting samples of the flowers, leaves, stems, minerals, etc., that are studied. Excellent class-room bulletins in geography and history are maintained by setting the children at work looking for and collecting pictures and articles that correlate with the grade work. Teachers who have not tried sending boys to the offices of the various railroad and steamship lines and traveling agencies have lost excellent maps, pictures, and illustrations of countries and people taught in the grade work that are far better than those in the geographies.

Many children often experience the promptings of a strong migratory impulse. The teacher of a lad in one of our city schools, who suffered from so strong a craving of this nature that it led him to play truant, effected a permanent cure by sending him to places of historic and commercial interest after school hours and on Saturday and Sunday. To lend these visits an air of seriousness she required the boy to bring in a report of his observations. In all these cases we have instincts which teachers commonly regard as undesirable so utilized that they become worthy motives for desirable ends.

Classification of Instincts.—The instincts that we discussed, numerous and diversified though they may be, lend themselves to a more or less systematic classification. Every individual shows the influence of four groups of instincts: (1) of Mental Activity—these include curiosity, imitation, and interest; (2) of Physical Activity, as exemplified by constructiveness, manipulation, play, and effort; (3) of Social Activity, of which parental love, sociability, kindness, sympathy, a desire to communicate what we feel or know, are illustrations; and (4) of Individual Activity, as manifested by emulation, rivalry, ownership, and pugnacity.

Varying Persistency of Instincts.—Under these four heads we group a list of instincts that cannot be enumerated in our limited study. But we must not erroneously suppose that these are ever-present. Very often instincts are not present for more than a definite part of a lifetime. Thus, some instincts which are very strong in youth—like curiosity, pugnacity, and play—weaken considerably as we grow older. Others do not make their appearance until a late date. Thus, parental love, care of personal appearance, develop after the period of youth. We have great difficulty in getting a young child to think of his person, of his clothes and appearance, but the high-school teacher often finds a tendency on the part of his pupils to overdress. The modesty and reserve which may be overdeveloped to a fault in preadolescence may become greatly minimized in the same child after adolescence. Instincts may, therefore, be characteristic of a particular age, and not run parallel with life. This does not mean that these instincts are weaker. Very often a temporary instinct is even more powerful and intense while it lasts than one that stays from birth to death.

It must also be remembered that instincts are constantly being modified through the influence of environment, education, and human reason. As the environment changes, our whole nervous organizations remodel themselves to new conditions. Old tendencies die out. The pugnacity, the thievery, the treachery and murder, of savage hearts have all

been curbed until not more than a vestige of their former strength is left. The new living conditions do not call for these, but for other impulses that mean better control of the new environment. We have seen the means that education employs to curb and modify undesirable instincts. It also strives to lift us to the highest mental level by placing reason in the ascendancy. As life progresses and the influence of education becomes more potent, reason, not instinct, must become the guide in life. Instincts may prompt a necessary activity that ministers to the well being of an individual, but it must be reason that will select the best means of attaining a conscious goal. Without reason where would the instinct of curiosity lead us? The migratory instinct impels us to roam about and learn our environment. Without the light of reason how dark would our journey be! Instincts are the guide posts to the teacher. They determine the line of march, the point of attack, and the time for retreat.

Conclusion.—We see, then, that we are controlled to a great extent by our instinctive tendencies. Like ideals in education, instincts determine the direction of our aims and activities. The stock phrases in education concerning instincts are as numerous as they are stupid. Many tell us to be guided absolutely by our instincts—"follow them," "give them complete rein." These Rousseauites forget that such a course is impossible and exceedingly dangerous. Although biologically good, instincts are ethically lacking when judged in the light of our present moral life. "Curb all instincts" is a contrary suggestion, but we know how futile such an attempt must be. What shall we do? The only course that is left to take is the intermediary, viz., make education a process of mental and moral nurture based on the child's mental and moral nature. Education must be regarded as a process in which we try to inculcate mental and moral standards through an appeal to the child's natural yearnings and impulses. With such an object in view, education would constantly strive to attain the best adjustment to the environ-

ment, with, not against, the child. Every pupil would be an active coöperator in the educational process. How can this be achieved? The later study in the instinctive aspect of education may tell us.

SUGGESTED READING

- ANGELL. *Psychology*, Chaps. 15 and 16.
BALDWIN. *Development and Evolution*, Chaps. 5 and 6.
 Mental Development, Chap. 6.
BOLTON. *Principles of Education*, Chap. 8.
HORNE. *Psychological Principles of Education*, Chap. 23.
JAMES. *Talks to Teachers*, Chaps. 6 and 7.
 Psychology (Briefer Course), Chap. 25.
JORDAN AND KELLOG. *Evolution and Animal Life*, Chap. 20.
KIRKPATRICK. *Fundamentals of Child Study*.
MILLER. *Psychology of Thinking*, Chap. 7.
OPPENHEIM. *Mental Growth and Control*, Chap. 5.
RIBOT. *Heredity*, Part I, Chap. 1.
THORNDIKE. *Principles of Teaching*, Chap. 3.

CHAPTER XII

IMITATION AND EMULATION

The importance of instincts in educational endeavor makes necessary a further study of the predominating ones that the teacher encounters in class-room teaching and discipline. The first of these is imitation, as abused and censured by some, as it is praised and overemphasized by others. How prominent a place shall imitation occupy in education? What reasons have we for giving it the position that is so often accorded to it? How shall we utilize it in our educative processes? The problems of imitation in education must therefore be our immediate concern.

Origin of Imitation: Its Psychological Basis.—"The child is an imitative creature" is a common expression reflecting the fact that even to the lay mind imitation is an instinct. Psychologically, we explain imitation by Baldwin's Law of Dynamogenesis, "An idea or a concept always tends to work itself out in action," or, to quote James, "All consciousness is motor." When the mind is possessed of an idea we experience an innate, irresistible craving to express it. If we conceive a new process the tendency is to diagram it. Feelings of joy and sorrow give evidence of their existence by working themselves out on the face. Fear causes a change in the heart, lungs, and skin. All consciousness tends to take on a physical as well as a mental aspect. Whenever, therefore, we become conscious of an act or a thought of others, we instinctively imitate it in our unconscious endeavor to work this thought out in action. In addition to this psychological explanation, there is also a purely physiological basis that is worthy of note. Every vital nerve tissue possesses two basic properties, (1) excitability, or irritability, and

(2) contractability. Hence, we have the familiar statement, "Every nerve cell is both sensory and motor." . . . "Hence, when a sense organ is stimulated, nerve tissues are affected, energy is liberated, and motor, i. e., muscular reactions, tend to take place."

Imitation explains, therefore, the tremendous importance of environment as an educative and molding influence. It also indicates clearly and unmistakably the social function of each individual in society, the responsibility that each one of us must bear, for each member of society helps make the environment for all the others. Everything that we do in the normal discharge of our daily routine has its social consequences when judged as a means of stimulating imitation by others. Education shows us how truly "each man is his brother's keeper," unconsciously shaping the destinies of his fellow-men.

Nature and Definitions of Imitation.—From this general view of the function of imitation we conclude that it is the innate tendency to reproduce the actions and ideas of others. Gordy defines it as the "tendency to do, to think, and to feel what those with whom we have associated are doing, thinking, and feeling." But, since we become possessed of thoughts of others unconsciously as well as consciously, imitation may, therefore, be an unconscious process. When our lives are molded by our friends we have an example of the unconscious imitation. We frequently trace a marked change in our conceptions of art, of science, in our taste, our hopes and ambitions, in our very attitude toward life, to the very subtle and keen influences of an associate or a teacher. Here we have the deepest and most far-reaching effect of imitation, but imitation that is usually unconscious.

We may, therefore, conceive three important groups of imitation: The first is the conscious, or intentional, imitation that Baldwin calls *ideo-motor-suggestion*, in which we realize the worth of a model and proceed to make it our pattern. A consciousness of a high regard for any person, any action, any motive, usually guarantees a deliberate attempt at

imitation. The second kind of imitative action is the unconscious imitation which Baldwin designates by the compound term of sensori-motor-suggestion; this form of imitation shows clearly the absence of a definite conscious idea in the mind after which we try to pattern ourselves. A third class is auto-imitation. From its very name we see that it includes those actions that we ourselves originate and which we make a model for imitation. We have often heard an infant accidentally utter a sound like "da-da," and keep repeating it with great pleasure until attention is diverted. By chance we discover that a pain is experienced when a foreign body touches a sensitive spot in a tooth. Few have enough will power to keep from irritating the tooth by a pressure of the tongue. A particular melody, or picture, or idea seems to leap into the mind. We are almost driven to madness in our attempt to keep from repeating this sound, or image, or thought. It is manifest, therefore, that we may be the makers of our own patterns for imitation.

Another characteristic that we must also note is that we generally imitate those in the same class or species. Unless we regard a person as at least our equal he can have no influence in molding our personalities. Kirkpatrick, therefore, defines imitation as the "tendency to repeat what has been perceived in others of the same species." He argues, "Imitation may be regarded as a specialization of the social instinct, that renders an individual sensitive to what companions do, to such an extent that their movements serve as stimulations to make similar movements."

A differentiating feature of imitation is that the instinct is often so modified that it becomes more than a mere blind impulse. Children indulge in it very often because of the intense delight which it brings to them. An intelligent child welcomes every opportunity for imitation because it has powers, capabilities, capacities craving for use and rational employment. Imitation is the safety valve that enables this eager energy to be drained off in the happiest form. Cooley, in his "Human Nature and the Social Order," tells us, "The

child needs to do things and imitation gives him things to do."

As a final point in our estimate of the educative force of imitation we must note that its normal impulse in no way indicates inferior mentality; we must make this observation very emphatic. Imitation is a fruitful force in education, for it leads to acquisition of life's necessary activities. Classroom experience gives repeated evidence of the fact that the bright child is quick at imitation, accurate at performing a task in the manner explained and prescribed; the dullard, on the contrary, is slow and unreliable in his imitations. Royce maintains that "only the imitative animal can become rational." Bolton goes a step further in expressing this view, for he holds, "we are wholly justified in saying that the more imitative the individual, the more educable." We must be careful not to read too much into the citation, for the author does not say "the more educated" but "the more educable"; the more imitative we are, the more opportunities we have for greater education; the possession of added powers is not guaranteed by imitation, for opportunities are not always realized and possibilities are not always actualized.

The Function of Imitation in Education.

I. *As a Socializing Agent.*—The modern tendency in education makes imitation a potent factor. This is due to the fact that it is a socializing agent. Imitation is a means of acquiring the race's practical experience without the toil and effort of the discoverer. We learn the necessary activities of life like walking, talking, eating, by imitating our elders. Our social instinct, prompted by the imitative impulse, leads us to appropriate the ways and customs of society just as soon as we are conscious of them. In adjusting ourselves to the environment we copy all that is essential in it. Imitation thus gives us a common basis of language, customs, and ideals, produces a social homogeneity which makes community life possible. Imitation is hence a social bond, a means of becoming initiated into society. Without imitation there could be no social sympathy within a group. Imitation

tation often forces a repression of the individuating nature in an attempt to socialize. In this way it guarantees a saving of mental and physical energy. Who can estimate the cost of rediscovering what is necessary to our welfare instead of copying the best that has survived! Imitation thus makes the adjustment to the environment come sooner than otherwise, and reduces the educational period of infancy considerably, for it "tends to emancipate the child from the influence of heredity and self-regarding impulses and bring him under the influence of those around him."

It is a very common view among laymen that imitation has little influence in the development of the adult, whose psychic life is characterized by rationality and volitional guidance. But, upon closer scrutiny of the problem, we come to a conclusion wholly different, as a bird's-eye view of human progress will readily show.

In studying history, literature, education, or any phase of human civilization, we speak of periods and ages, the Renaissance, the Reformation, the Elizabethan, and the like. In each we find similar tastes, similar aims and ideals of life, similar aspects of the social problem. Each epoch has its own "Zeitgeist," its own spirit of the age. If it is not by means of an "age," then it is through "schools" that we study the progress of culture. In art we have the Romanesque or the Gothic Periods; the Barbizon or the Impressionistic School; in literature we have the Romanticists, the Decadents, the Moralists. Why this uniformity? The sociologist explains that this is caused by unconscious imitation on a grand scale. "Art has developed by slowly accumulating imitative accretions." All phases of life show the influences of this social imitation. In every panic in this country we find a feeling of overconfidence preceding the coup; then a local movement occurs which undermines the general confidence. One person copies the attitude and feelings of another until a whole country is affected. A national hysteria possesses and overclouds the dictates of reason.

Each epoch brings its own craze. During the Crusades

everybody felt a mad desire to join the moving forces to the Holy Land. Had we lived then we would have been filled with their insane enthusiasm. Had we been citizens of New England in Colonial days we, too, would have been afflicted with the witchcraft madness and had the blood of the innocent on our hands. Authentic reports tell us that the Spanish-American war could have been averted, but the statesmen in control dared not cross public opinion; everybody demanded Spanish blood. How fast we proclaim the hero, how intense the enthusiasm that runs riot, but how quickly do we snatch the crown that we offered! Sidis thinks that most people are usually in a semihypnotic trance, for "men think in crowds and go mad in herds."

Gabriel Tarde, in his remarkable treatise, "The Laws of Imitation," explains the existence of the whole of society by the principles of imitation and invention. Imitation conserves the old in society, invention adapts the old to new needs and changing conditions. James calls imitation and invention "the two legs on which the human race, historically, has walked." Tarde says, "All the actions of man in society, from the satisfaction of simple organic needs to the inventions of science and art, are the outcome of imitation." Leibnitz realized the potency of imitation as a social force, for he tells us, "The boy or girl is a social monad, a little world which reflects the whole system of influences coming to stir its sensibilities."

II. *As an Intellectual Agent.*—Let us apply the imitative activity to the class room directly. Generally speaking, a child imitates those things that have an interest for him; good or bad, just or unjust, are no factors in his choice. A child will usually copy the vices and the pranks of those about him rather than the lessons of industry and sincerity, because the former have a greater interest for him. Just as in the course of our physical development we pass through a number of stages, each reflecting some lower form, so, too, in our mental development, we pass through a series of steps whose interests, desires, and impulses are allied with

those of savage society and of animal forms. Mentally and morally the child is still a savage. Since a lower stratum of society approximates more closely the stage of the child's mentality, his natural tendency is to imitate the poorer rather than the better elements of his environment, for there his interests lie. The teacher's problem, as far as imitation is concerned, is twofold, (1) to offer such models as are worthy of imitation, and (2) to lead the child to center his interests in things better and nobler. Let us consider these separately.

(1) *The Child and the Model.*—The first of these problems is receiving much attention in the schools to-day by the prevalence of teaching and disciplining through models. An attempt is made to supply pleasant and æsthetic surroundings, which have their deep and subtle influence upon the plastic child mind. It is the hope of the teacher that the child will consciously try to reproduce the air of refinement of the well-kept and decorated class room in its home if the child's station in life should make it necessary. Children in the heart of the tenement district can be seen planting in boxes on ledges of windows that face into dark and ill-smelling airshafts, or caring for a fish in an improvised aquarium; they give evidence in varied forms of the deep impression which proper environment makes upon their impressionistic minds.

The teaching of many elementary subjects is based absolutely on imitation. No better illustration can be suggested than language work. To write or speak well means to approach with greatest proximity the standards set by the writers of the first order. The more we study and imitate them, the greater is our mastery of the language. Composition is hence taught pedagogically when the "model" is used. Many school authorities fear that composition work through models tends to repress the child's natural expression, and, as a result of the conscious imitation, the child produces a stilted, lifeless effect. Hence, they argue, always present the model after the composition is written, for a comparative

study rather than for imitation. There is undoubtedly some truth in the position, but it overstates the case. Class teachers can safely vouch for the efficiency of the model. It shows the child the mode of treatment and development. It supplies the necessary words, good phrases, and model sentences. Given a kindred topic after studying the model, the child can find its bearings and work out its own salvation. The teacher can always introduce enough changes in the assigned topic to give each child an opportunity to display his originality and personality.

Only in the lowest grades should the model be reproduced faithfully. As soon as possible we must allow for personal change by the children. But it is safe to say that, in all classes below the sixth year, the model should precede the composition. The children's command of language is not sufficient for unaided composition work. But, in classes above the sixth year, the model may follow the composition when the topic is a simple narrative or a biographical sketch. In these cases we may allow the child to produce a composition which is the result of his own language accomplishment and then use the model for purposes of comparison and correction. But, in description, exposition, and the more difficult forms of writing, the model should be studied before and not after the child's composition. Our work in composition is better to-day than it has ever been in the public schools. There is a general unanimity of opinion that this change is due to the emphasis on careful study of the language model.

We are fully alive to the needs of basing our written work on imitation, but we frequently do not realize the importance of teaching oral English on the same principle. In the reading lessons we do not read enough to our children, we do not set a sufficient number of models of oral expression before the class. Many teachers have no hesitation in calling upon a poor reader, a child with some impediment or foreign defect in his speech, to render a given selection before the class. His mispronunciations are heard by his classmates,

and, though the teacher corrects each one of them when the child has completed the recitation, the chances are very strong that other pupils will carry away the incorrect rather than the correct pronunciation. A child who has never met a particular word hears two pronunciations: the incorrect one from his classmate and the correct one from his teacher; to him they are equally correct. The fact that the teacher has indicated the proper one is no guarantee that the pupil will remember this one and forget the other. Teachers must take every precaution to keep wrong pronunciations from reaching the ears of their pupils. To minimize the occurrence of those situations where the child recalls two pronunciations and wonders which is right and which is wrong, which is the teacher's and which his classmate's, teachers must read a given selection before calling upon a child deficient in oral reading. To read after such a child mutilates a paragraph or stanza, is too late, for the mischief is already done. We learn to write and to speak as we learn to swim—by watching and imitating. Hence, the place of the model in writing and reading is before and not after the pupils' efforts, with children whose abilities in language are very limited.

(2) *Interest in Good Models.*—Our initial statement was that children imitate only those things in which they find an interest. The second duty of the teacher is hence to select models that are not only good but interesting, for the ultimate aim is to arouse a desire for the good as well as for the interesting. This general question we shall consider in our discussion of the doctrine of interest, but, in passing, we may note that the models selected must be such as are part of the child's life, their themes must deal with his activities, his games, his interests, his instincts, his environment. If the models that we select in drawing, literature, and composition reflect what is vital in the child's life, they will be imitated with spirit and an element of originality will be manifested. But, if the model is not interesting, imitation is mechanical and lifeless, a dead reproduction, a transcription of words and ideas without zest or spirit.

Mental Result of Imitation.—Aside from formal lessons, imitation has a very important educational function. As the child begins to imitate others, to realize the full significance and the meaning of these acts, there dawns upon him a consciousness of an outside world which we call the non-ego, the not-self, because it is outside of the ego. But simultaneously with this conception of the non-ego there must necessarily arise the conception of the ego, the self. The moment we are conscious that we are imitating people not ourselves, we are conscious of the self. One contains the other. Baldwin, therefore, asserts that the "ego" and the "alter," the "I" and the "you," are born at the same time, for the consciousness of the latter necessitates the conception of the former. To quote him, "My sense of myself grows by imitation of you, and my sense of yourself grows in terms of my sense of myself."

Reducing this abstract psychology to practical needs, it becomes: in imitating others we become conscious of ourselves. In leading a child to imitate some worthy model of character, in real life or in literature, we tend to make him conscious of his own powers. Those acts and achievements that the child considered above him he clearly perceives to be such as he can do. Stratton adds, "The child's own strength and skill and versatility are not only cultivated but are revealed to himself. Imitation, then, where we slavishly copy the ideas of those near us, is all the while teaching us our own capacity." Imitation, hence, acquaints each individual with his own capabilities, and suggests achievements that are within the scope of his abilities.

III. *As a Character Agent.*—Imitation has a place in educational practice not only because it is a socializing and an intellectual agent but because of its character influence. Educators urge that imitation influences character because in a peculiar sense it makes for initiative and morality. Let us turn to each of these two possibilities.

Imitation and Initiative.—Horne argues, "Through bringing us to consciousness of ourselves, imitation makes our orig-

inality possible." At first thought it seems paradoxical to associate these two terms, as their very natures seem to be diametrically opposed. To originate and to initiate both mean to lead; to imitate means to follow. That this is not necessarily so, is Horne's position. Let us examine the imitative power of childhood when it is most active. At any moment there are numberless activities about us, each worthy of imitation, each leading to its own desirable end. One individual imitates some of these and neglects the others, another chooses what his friend neglected and neglects the very ones that appealed most strongly to the first. In teaching design we offer a dozen different combinations to the class; each one of these will be chosen and imitated by its respective sponsors. In this choice there is an expression of originality, of personal preference, of initiation.

Then, again, no imitation is an exact reproduction. Each imitator impresses his own peculiar taste and personality on the replica. What child does exactly as he is told? Details, unimportant to us, appear of momentous weight to another who is copying our work. As a concrete illustration we recall how we often blame a child for not carrying out an order exactly as we gave it. We show the child how to arrange his paper, where to rule the lines, how far to measure, where to place his answer, etc. To our disappointment the child changes some of the details. We know that it is not intentional disobedience. In searching for the cause we lay it at the door of inattention or carelessness. While these charges are often true, the real cause is to be found in the child's interpretation or misinterpretation of the relative importance of the details. The child's personality, tastes, and desires color the instructions, and we get, not an exact, but a personal imitation. We can see the same results if five successive persons relate the same incident. How changed is the story of the fifth from that told by the first, in spite of all efforts to render an exact reproduction. Incidents that are meaningless to one person are fraught with intelligence and suggestion to another. Each individual brings all his

past experience to bear on what he is about to imitate. The act to be modeled is thus interpreted in terms of the past. Since no two individuals have had the same past life, no two imitations can be exactly alike. We do not, therefore, create an exact reproduction, for, though the process is an imitative one, each individual views it in terms of his past self and recreates the model in his own image. Therefore, it is concluded, imitation develops originality.

While the illustration is true to life, we can hardly agree with Horne that "imitation is the mere schoolmaster that brings us to originality." The fact that we do not imitate all things, but make a choice, only argues that, with our limited time and capabilities, we select only those things for reproduction which have most meaning and use for us. It does not show originality nor does it make initiators of imitators. The fact that we imitate each in terms of ourselves is also not a proof of the position which makes imitation the schoolmaster of originality. It simply argues that we are slaves of our past lives, that conscious imitation will, therefore, not give an overexact replica, but it does not prove that imitation leads to the expression of originality. It is a dangerous doctrine to introduce in teaching; for, feeling sure that imitation is the "mere schoolmaster" which will bring us to initiation, our work may become too imitative and may tend to kill thought and thoroughly mechanize our methods of instruction.

Imitation and Morality.—But few, if any, will deny that our ethical ideals and moral standards are gained through imitation. Morality is based upon the recognition of the sanctity of the rights of others. This recognition crystallizes itself into definite formulæ of conduct which become basic in social life. The child is born into a society already possessed of these ideals. From his very earliest years he is taught to imitate these. The child's moral conception of right and justice comes from those about him. His parents and teachers are constantly urging that he imitate these, and that he mold his life in harmony with them. He therefore tries

to live, as nearly as he can, in the socially approved fashion by imitating it.

From this point of view, morality as an imitative result,—biographical studies in history, and character development in literature, become of vast importance. It is well-nigh impossible to set up an abstract principle of conduct or a virtue, and ask the child to follow it as its model. In the life of the personages of history and literature the child finds the living embodiment of all that is noble and lofty. Morality, when reflected in a person, becomes concrete for the children. Hence, they set up their idols: Hiawatha stands for bravery, Evangeline for patience and sacrifice, Robinson Crusoe for perseverance, Brutus for unselfishness. The child, young and immature, feels, even if he does not fully understand, the greatness of the characters; they therefore supply him with thoughts, actions, and motives which he imitates and which have the subtle unconscious influence that we discussed earlier in the chapter.

For this same reason, too, the teacher is a very vital moral force in the class-room. Educational platitudes that constantly assail our ears tell us that the teacher is the apotheosis of the ideals and inspirations of the child, the model constantly being imitated, that consciously or unconsciously the teacher is the molder of the character of mankind, that therefore society's most sacred duty lies in the selection of the proper teachers to guide the destinies of the young. But too often the teacher occupies a position not quite so lofty in the minds of the children. They come to us with ideals of character gained at home, from their literature, or religion—ideals so lofty as to be impossible in common mortals living in this workaday world. To these ideals the child expects us to measure up. This may explain the keen disappointment the average child experiences when he finds his teacher heir to the same weaknesses as his parents.

A little class-room experience usually serves to disillusion the teacher if he feels that the child regards him as the model of all that is desirable, the model which he constantly imi-

tates. The difference in age, maturity, interests, and viewpoints on all questions vital in child life, serves to make the child feel intuitively that the teacher is too lofty to be imitated. The average child's respect and reverence for his teachers place most of us on a plane too high for imitation. The child patterns himself after that which he feels is attainable. This explains why the reputed leaders of the class so often become the molders of the character and actions of the average child. The teacher who wins the class leaders and instils in them a new spirit has taken the most effective action in raising classroom order to the heights of discipline. As in the real world about us, so in the school community, public opinion is the reflection of views and standards of the recognized controllers of the social body. It is what the leaders of the children hold rather than what the teacher espouses that makes for right or wrong in the child's life. No matter what we may say, "telling on the wrongdoer" will always be wrong in children's eyes, "taking revenge" will always be justified by them, and "cribbing" will ever be regarded as a very pardonable if not a dubious vice in examinations and tests.

We must add a word of caution to this conception of morality as a result of imitation. There are two standards of ethics, the revealed and the individual. The child becomes conscious of the former and acquires it in the imitative process that we explained. The revealed standard is society's standard, which we copy. But, as we reach maturity, we develop a personal sense of right and wrong so that in later life our morality is not imitative but rather initiative. All acts of later life should be gauged by a personal standard which is higher than society's moral yardstick that is reproduced by all.

Limitations of Imitation.—Despite all the possibilities that may be revealed in an analysis of imitation, it must not be given undue importance in education. At best imitation is an instinct and as such needs utilization, transformation, and elimination rather than extra development. It shows itself at the age of about six or nine months, develops

continually, and becomes the chief means of acquiring knowledge when reason, hereditary influence, and individuality are weakest. But, when the age of reason is attained, when the individual can guide his own life, imitation must be curtailed; it must be the object of education to achieve all its possibilities and then leave it far behind.

A training in which imitation is the basis and the ultimate aim must produce a static mind and a static society. The first step for future progress is a mastery of the past. But we must not merely relive the past. The dynamic factor, the personnel of the present age, must not be neglected. Overimitation makes progress in society impossible and causes mental stagnation in the individual. Mere absorption, doing what others do, and learning what others learn, without personal reaction, is not education, but training. Mind must be more than a duplicating function.

Therefore, in all conscious imitative acts in the class room the child should be led to imitate the spirit rather than the process or the form. We may urge upon the child to imitate another's conduct. If he reproduces the person's gestures, speech, intonation, we have an affected individual. Conduct cannot be imitated unless the spirit of the leader is caught. We must take the attitude which says "what would he have done under these circumstances, not what did he do." In the one case imitation is stimulating, in the other stultifying.

Emulation and Rivalry: *Their Nature.*—Imitation, we concluded, was prompted by the socializing nature of the individual and led each person to reproduce the actions of others in his class, thus establishing a common sympathy which forms the basis of community life and social harmony. But the mind's activity manifests itself through another instinct, closely allied to imitation, viz., emulation, in which we seek at least to equal, if not to excel, the achievements of others. This emulative tendency often becomes nothing more than an application of the principles of rivalry and competition, forces and motives, that are clearly individualistic. Em-

ulation is therefore prompted by the individuating nature of the child and is opposed in spirit and in nature to the social craving. It seeks rather to give expression to the instinctive longing, to acquire and maintain as much individual power and personal influence as possible. Emulation pits individual against individual; with rivalry, we class it among the instincts of antisocial or individual activity.

This desire to excel, being instinctive and being prompted by the individuating nature, is very powerful and dominating. It causes each individual to put what strain he can upon himself, to accomplish what others have achieved. In emulation and rivalry we find the spirit of fight and the zest of competition which lead to greater personal exertion. In competition the child learns his own strength and power, for it is in the struggle and the fight that we become conscious of our capabilities and endurance. For this reason emulation and rivalry are prominent factors in class and school discipline, and occupy a high position among the motives to which the teacher appeals in his desire to get the maximum endeavor from each child.

Emulation in Past Education.—The greatest, if not the loftiest, development of the principles of emulation and rivalry, we find, was attained by the Jesuits in their educational system. Their curriculum holds, "Emulation is the whetstone of latent talent, and the spur of industry." To live up to this estimate of emulation they divided their classes into two intellectual armies, the Carthaginians and the Romans. Questions were hurled at both sides by the instructors, then each army quizzed its opponent in order to see which would be victorious in the intellectual onslaught. In the lower classes the endeavor was to make each child both an incentive and a corrective to its neighbors. Hence, these children were taught in pairs. Each child was first his mate's rival in his work and, second, the guard of his conduct, watching him for unconscious disobedience or intentional violation of school regulations. "Nothing will be more honorable than to outstrip a fellow student, nothing more dis-

honorable than to be outstripped," the course of study declares. "Hence," it concludes, "in order to maintain emulation it is necessary that each pupil have a rival to control his conduct and criticize him." Monroe, in criticizing the abnormal emphasis on emulation and rivalry, says, "This amounted to almost repression on the one hand and espionage on the other." By way of defence of the Jesuit Fathers we must add that these two instincts were invoked to so great an extent because it was their great hope to rid their educational system of the violent forms of corporal punishment so prevalent in the schools of their day.

The Port Royalists give us an interpretation of the use of emulation and rivalry that is truly educational. "Each child is to be its own rival and to try to outstrip itself" was their dictum. We often give all credit to Rousseau for condemning competitive emulation in education; yet he only reiterated what the Port Royalists had said so long before him when he declared that he was opposed to teaching the child to emulate others because that degenerates into greed and selfishness. Let the child try to excel his own past achievements rather than those of others. Let each to-day vie with each yesterday, then each to-morrow will find him richer in thought and character, and farther on the road of progress.

Emulation Misapplied To-day.—Emulation and rivalry are often misunderstood to-day in class-room work. The most common violation is the habit of seating children according to their rank in lessons. It is the old system in which the brightest child sits at the head of the class and the dullard at the foot. There are three objections to such practices that are so serious that this system of rivalry and emulation ought to become a thing of the past. To begin with, the rivalry is most bitter and intense because it is extremely personal. Child number ten feels that he must beat child number nine. The idea that his own percentage must be increased, that he must do better to-day than last week, that he must strive to obtain ninety per cent. and not the old rating of eighty, all these

are no considerations in his effort. No matter what rating he attains, as long as it is above that of number nine he feels that he has succeeded, despite the fact that he scored only sixty per cent. to last week's eighty. Child number nine is therefore his enemy until he takes his place, then number eight becomes the opponent. This personal rivalry makes a child rejoice in his neighbor's misfortune and begrudge his success; this surely is a most undesirable attitude to inculcate in our children.

This means of arousing emulation and rivalry is not as effective and far reaching as we are prone to believe at first. It does not appeal to the great number in the class whom we are most anxious to reach. The child who ranks thirty-fifth in a class of fifty does not care about ranking thirtieth or even twenty-fifth. The one place is as unattractive as the other. Those near the top, who are naturally industrious, are overstimulated to forge ahead. Since emulation and rivalry are confined, therefore, to a narrow circle of the leaders of the class, the spirit of struggle and strife becomes too intense.

As a final objection we must consider the effect that this method has upon those few children who sit last. To be placed at the foot of the class brands the child "dunce" day in and day out. It is a means of reviving the old "fool's cap" and "dunce chair," in spirit, if not in fact. Such humiliation is cruel and degrading, and soon breaks a child's spirit. No boy or girl should bear the stigma of "the most stupid." We must not excuse such practices by saying "the children soon get used to it." The teacher who uttered these words failed to see that a system which makes the child insensible to shame and public disgrace needs no further condemnation to eradicate it from the class room to-day.

The teacher who groups the class into two or three divisions is far wiser. A pupil is emulating and rivaling no one pupil, but simply trying to do work equal to that done in a higher group. If a spirit of rivalry should arise it is an impersonal one between group and group. Group rivalry often develops a spirit of loyalty to the group. This means

appeals to almost every child in the room for there is a desire to leave division B for A, C for B. To make a change from one division to another is a marked jump; it is a serious and significant step, but to be shifted from rank twenty-eight to twenty-five means nothing. And, finally, there is no foot of the class, no "most stupid." If we have only two groups, or at most three, there is little stigma attached to being in the low division.

In addition to counteracting the disadvantages in place-taking, we find decided teaching benefits in grouping the class. Having all A children in one group, B's in another, and C's in a third, the teacher can with ease direct her attention to the slower or the brighter pupils at a moment's notice when the occasion arises. Should she at any moment decide to present a subject by the group system, the children are seated properly. If the children are scattered about the room there is a divided attention, an extra effort to make sure that she is not neglecting any of the slower pupils.

Prize-giving is another means of arousing rivalry and emulation that is almost wholly unwarranted with an experienced teacher. Only a few in the class have an opportunity of succeeding, hence we are appealing to the same small group, we are creating the same bitter personal rivalry. Then, too, if indulged in too frequently, it appeals to rather an unethical principle of conduct. The child begins to regard the prize as a reward for proper action. He obeys, is studious and conscientious because it pays. It is equivalent to perverting the old maxim to read "Honesty is intrinsically the best policy because it pays dollars and cents." Where prizes are given they must not be more frequent than twice in one term, and be given not only for greatest proficiency but also for most marked effort. Then the average or even the backward child has the same chance as the one near the head of the class, for we can all show earnest endeavor even if we cannot all succeed.

Rivalry and emulation can be used to good advantage in the class. It is undoubtedly good to emulate one's past self,

but we may emulate others and even go into a competition with them, and still keep the rivalry friendly and prevent it from degenerating into selfishness and greediness. Competition with others may show us how inferior we are, how much we must improve to be classed with our rivals. It seems to awaken a spirit of righteous discontent with ourselves, and it thus gives us an extra spur toward improvement. The joy and the enthusiasm of a spirited game are all gone without the friendly competition and rivalry. No runner does so well when he runs alone. Athletic records are not made during practice, but in the heat of competition.

Rivalry is a motive force in all animal life. The horse instinctively quickens his step as it hears the sounds of an approaching horse. The hound never chases its prey so quickly as when there are other dogs chasing for the same end. Rivalry is the propelling force of ambition. The consciousness that our friends have made more out of opportunities like our own is a tremendous spur for further progress. James sums the matter up by estimating that "Rivalry does nine-tenths of the world's work." Emulation is an instinct, and, like the others, it needs utilization and guidance, and suffers from the danger of overemphasis. With proper care and direction it can be made to subserve the aim of education.

But at all times we must remember that these two instincts, rivalry and emulation, call up the individuating nature, already too strong in childhood. Life is becoming more interrelated and more social every day. Our highest development and greatest salvation lie in coöperation, in working together, not apart. Emulation and rivalry, and personal competition, must, therefore, receive no undue emphasis in the class, for they lead us away from, not toward, the tendency and spirit of modern social and economic life.

SUGGESTED READING

BALDWIN. *Mental Development in the Child and Race*, Chaps. 6, 9, 10, 11 and 12.

- BOLTON. *Principles of Education*, Chap. 16.
COOLEY. *Human Nature and Social Order* Chap. 2.
DEAHL. *Imitation*, Columbia University Studies, May, 1900.
HORNE. *Psychological Principles of Education*, Chap. 24.
KIRKPATRICK. *Fundamentals of Child Study*, Chap. 8.
TARDE. *The Laws of Imitation*.

CHAPTER XIII

THE DOCTRINE OF INTEREST AND EFFORT

Emulation is the bridge connecting imitation and interest. We saw that imitation made the individual self-conscious of his powers. His strong individuating nature then led him to endeavor to emulate his fellowmen in order to equal if not to excel them. But we do not emulate nor imitate everybody nor everything. We select, consciously or unconsciously, only those that have a peculiar personal meaning for us, i. e., those things that interest us. For such things we gladly strive. But if we cannot attain them, nor imitate them, nor equal them, in our attempts at emulation, we put an extra strain upon our consciousness, an extra exertion upon our capabilities and powers in order to achieve what we set out to accomplish. This extra strain or exertion upon consciousness is effort.

Origin of Interest in Life and Education.—Primitive man was occupied solely with the problem of making a living, of keeping body and soul together. Whatever interest he had in life was unconsciously wrapped up in those activities which produced the necessities of existence. This was the sum total of life. The idea of drudgery never entered his consciousness. It was reserved for a later development and a higher civilization. The feeling of satisfaction of physical wants and feeling of bodily satiety were the only pleasures and the only interests of his life.

But, while primitive man had only one means of expressing his self-activity, only one kind of a goal to realize, we to-day have innumerable methods of giving vent to our self-activity and equally numerous aims to achieve. When we

find a means of expressing our activity that is in harmony with our inborn desires, that is most appropriate to our peculiar selves, we experience a feeling of satisfaction. This satisfaction supplies the element of interest in our work. But, using our activity in ways not in accord with our innate desires and capabilities, and accomplishing objects that do not coincide with our aims, give rise to that feeling of dissatisfaction which marks uninteresting work or drudgery. Savage society centered life and its goal about self-preservation; hence there was interest in that. Modern life presents so many varied occupations that, unless we engage in the proper one, our activity becomes drudgery instead of interesting life work. Drudgery is therefore a product of a higher and more varied civilization. The opposite of interest is not work but drudgery. When our occupation uses our activity and capabilities in the direction which they naturally seek we find interest and hence pleasure in the toil, no matter how difficult. There are no union hours for the artist or the professional class. Those engaged in occupation not parallel with their natural cravings are lost in drudgery, they are the misfits—perhaps through no fault of theirs—but nevertheless the sad by-products of progress. We see, therefore, that the problem of interest has a larger scope than the narrow class-room teaching view-point would lead us to suppose. It has a message for the sociologist as well as for the teacher.

Importance of Interest.—1. A common definition of interest that will serve as a beginning in developing our doctrine and its application to the class room is found in Dexter and Garlick's "Psychology of the School-room." To them "interest is the name given to that pleasurable feeling which is evoked by an object or idea, and gives that object or idea the power of arousing and sustaining the attention." To quote Horne, "Interest is not a form of knowledge, though knowledge may be interesting; neither is it a kind of action, though action, too, may be interesting. But interest is primarily a feeling." By feeling we mean the "tone" of pleasure or displeasure which accompanies each of our experi-

ences. In conscious or voluntary attention we make effort focal, hence the action of the will is necessitated. In interest there is a spontaneous pleasurable feeling which draws the mind to a particular form of knowledge; interest links mind and fact, hence it is an extremely important condition in teaching and in study, for it is a cause of knowledge.

2. Interest always has an object for which it strives. It is the conception of the end to be attained that gives meaning and intelligence to our activity. To quote, "The self does not run like an empty mill, producing nothing and seeking no product. Activity without an object is blind; with it, intelligent." Hence, when interest is present in teaching, we are moving toward a particular goal, for there is a definite path to be traveled and a positive end to be attained.

3. To acquire knowledge, prolonged and constant effort is needed. Children, immature and weak mentally, cannot give long concentration and close application to a task; interest is hence essential because it helps focus attention and effort by introducing pleasure.

Characteristics of Interest.—In a strict sense of the term we should speak of interests, not interest. Modern educators are beginning to class interests with instincts, for there is something urgent, active, propulsive in an interest. We have an interest in constructing things, in building, in telling, in finding out, just as we have instincts along these lines. The difference lies in the fact that an instinct leads to a reflex action; an interest usually does not, but rather to an action realized through conscious effort. Instincts of one individual are the instincts of all others, but the interests of one person are decidedly different from those of another. Hence we say that interests are individual characteristics, instincts, class characteristics. An interest is not only an individual characteristic, but it is thoroughly subjective. We feel it, we know it, it is part and parcel of our natures and temperaments, deciding for us our choices and our preferences. An interest is much easier to eradicate and undermine. Thus, a child's interest in one kind of literature, the "Diamond Dick"

stories, that we deem so objectionable and which causes so much anxiety to teachers and librarians, usually dies out when the child passes the age of adolescence. He tires of the same hair-breadth escapes, and the usual melodramatic climaxes. Such an interest usually disappears at the dawn of adolescence. Then, too, it is not unusual to wean a boy from such an interest by an honest and frank talk, followed by the recommendation of such books as the Trowbridge's, the Castleman's, the Tomlinson's, and the Henty's, and even Alger, if need be, at the beginning. As we begin to substitute stories of travel, adventure, biography, war, and the like, a new interest may develop which is as strong and as dominating as the old one, if not more so; we are thus utilizing the child's interest to read, and turning it into the proper channel.

Interests, therefore, become both an end and a means in education. From the point of view of the child, an interest is a means, for it is the motive which leads to the acquisition of knowledge, the exertion of effort, and the accomplishment of the aim or object it covets. From the point of view of the teacher engaged in the act of teaching, it is an end. As such it marks the ideal which the teacher wishes to inculcate, the star that is to guide and direct the future activity of the child in this particular field of knowledge. Thus we are seeking to arouse an interest in proper conduct, in literature, in study, in nature, in things æsthetic, and in sounds harmonious. Interest in the process is a means in education; interest in the final attainment and the lasting result, an end. Much higgling and haggling has been going on in education about the true position of interest in teaching. Some see it as a means, others as an end, but, for some mysterious reason, each fails to see that the other is right; hence both are correct. This conception will help us materially when we reach the discussion of the controversy of interest vs. effort.

Another essential to note is the fact that interest is ever-present in all activities of the child. This the teacher is most prone to disbelieve. We can readily see the presence of inter-

- est when the child is at his game, in the workshop, reading an interesting story or listening to his teacher's narration of the history. But where is the interest when the child is struggling with the multiplication tables, learning the location of islands, capes, cities in geography, names and dates in history, outrageous unphonetic monstrosities in spelling? The interest in the former group of activities is positive and dynamic, leading the child in each activity. In the latter group it is static, negative, but present for all that. The child is controlled by the interest to escape certain forms of punishment which follow disobedience. He is interested in saving himself from the odium of receiving a deficient mark, from the disgrace of bringing home a bad report card, and the like; he is interested in being through with the task. There is motive present. Of course, it is our endeavor to make the positive and dynamic interest characteristic of as much school work as possible. But withal much of the class-room work will never be done from any other interest than the negative, static one.

As a final point, we must remember that interest and effort must not be considered as opposite conditions in teaching but rather as inseparable companions. To merely interest children without demanding effort of them means to turn school duties into an amusement, to dissipate and waste the energies of youth. To require effort and exertion of children without interest and the pleasurable element means to introduce the drudgery, the mechanical drills, the weariness of the old elementary school and its teachings by memorizing without a rational basis. Interest and effort, each gains strength and meaning in the presence of the other, each loses its educational value when alone; hence they are complementary and mutually supplementary conditions in teaching. Interest has been called the "long arm lever" of education. With it what obstacles of instruction cannot be removed, what attention and effort will the child not give! Because all interest must result in effort, interest seeks not the line of least resistance, but the line of greatest attraction; not to

make toil necessarily easy, but pleasurable, so that we will do it for its own sake.

The Interest vs. the Effort School in Education.—The lack of a proper conception of the mutuality of interest and effort has always been the cause of bitter contention. The ultimate function of interest in education has given rise to two schools. The older of the two emphasizes that the school is a preparation for future life; in the post-school days the child will meet problems that are trying and exceedingly difficult; hard knocks and merciless treatment will often be his portion. School work should therefore be conducted in a somewhat similar spirit. Stern and unrelenting should be the discipline; difficult and serious should be the work, so that life's future battle will find the individual well prepared. Effort and will-power must predominate in the school studies. Effort is the keynote in their plan of education.

The second and more modern group of educators assert that the school is a participation in life as well as a preparation for it, hence, school work must lose the element of drudgery and substitute for it pleasure. The child must be led to feel that he has an interest in the things he studies. We must show him that the lessons of physics and physical geography learned in the school room apply to every-day life, that the scenes of past history are being enacted before his very eyes in the present. Interest must be the keynote in class and school work.

These two opposite views of interest have led to two opposing schools in education that are known as the effort, or disciplinary, and the interest school, respectively. Their rival contentions have been the cause of endless argument and debate. Dewey calls them the participants in an educational law suit. The controversy is important, for a proper verdict determines the spirit of the work and the management of the school. Let us therefore see the points at issue, the imputations and limitations hurled back and forth.

The interest school maintains most of what we have said in discussing interest as a feeling. Their contention is that

the chief function of the teacher is to so present the subject that it arouses interest. This will guarantee attention and fix the line of activity, whether physical, mental, or moral. The child learns more when he is free, when he is interested, when he pursues an activity willingly. Nothing can be accomplished by forcing and driving the child. There must be a spirit, not only of freedom, but of spontaneity, if we expect the child's activity to express itself, to bring out the most and the best of the possibilities wrapped up in it. With interest as the shibboleth and as the teachers' educational compass needle, we can be assured of a sympathetic attitude toward the child, for the teacher is forced to study its natural instincts, to guide, control, and utilize them as we suggested in our past study. If the child is to work because he is forced, then we weaken his activity because it becomes dependent upon outside pressure. Remove the force from without and the child quits his work. Hence, there is no element of permanence in such a training. Effort education is morally bad, for it encourages deception and hypocrisy. The child pretends to be at work, but his thoughts and desires are far from his assigned task. The effort theory is a psychological contradiction, because it is impossible to call forth any useful activity, any necessary expression of the self-activity, unless interest is present to serve as a motive. The effort theory further substitutes one interest for another, one that is indirect, negative, and static for another that is direct, positive, and dynamic. The child works from a sense of fear of the consequences should he refuse. The effort school would make an individual dull, mechanical, automatic, controlled by a blind sense of duty.

The effort school educators constantly urge that the basic function of the school is to prepare for life in the real world. There no one stands ready to sweeten life's disagreeable experiences and activities. We must learn to swallow the bitter pill, to take the setbacks and disappointments. Each reverse must find us stronger and ever ready to renew the fight. The real man is he who, like Malcolm, says,

“Lay on, Macduff;
And damn'd be him that first cries, Hold, enough.”

If fate is kind and holds a pleasurable future for us, and if our path is to be strewn with roses, nothing is lost. Forewarned is forearmed, but forewarned and forearmed are the best guarantee of indomitable courage in life's struggles. The interest educators seek to do too much for the child, to “sugar-coat” the bitter, to remove the difficulties in school work, which are really blessings. They are constantly prodding the child on, overstimulating it intellectually, helping it over all the turns and rough places. The result is obvious. They are hurting the child morally and intellectually, for, in giving undue help, they weaken. The interest theory is a delusion; it hides the cold fact, presents only the interesting part of the subject; but things dull and uninteresting must be learned later anyhow, hence, instead of solving the problem, they only postpone it. The theory also defeats its own ends, for, in constantly trying to make the dull facts interesting, it leads the child to expect a tone of pleasure in all tasks. When, in the last analysis, all devices to interest have been used, the child has not the necessary concentration and power of application to master its tasks. The child is left stranded high and dry and must wait for the flood tide of interest to carry it to its aim. The real test of an educational system is always the power which the child can put forth by its own promptings from within. The child must be trained toward this ideal. School discipline must be severe and rigorous. Teaching should require the maximum effort. The teacher should be guided by the question, “do they understand?” not “are they interested?” Interested or not interested, the child must learn to work because of the authority which controls. In the school it is the authority of the teacher, in later life it is the authority of life's forces and circumstances.

This debate is a question of interest and spontaneity vs. effort and authority. The controversy is about a century

old, but it crops out at every educational conference, and at attempts to inaugurate new curricula or to modify existing ones. Which of these two sides are we to stamp "Approved"? Which shall determine our class-room ideals and endeavors? Both views are full of misconceptions, both lack a comprehension of the true nature and the motive force of interest, and both show an utter ignorance of the psychology at the basis of the problem. Dewey, who has made the greatest contribution to the theory of interest, suggests the first two criticisms.

Misconceptions of the Problem in the Two Schools.—

(1) A mere cursory view of the arguments bandied back and forth by the contestants shows us that both interest and effort schools are strong on the negative side. Each shows the limitations and misconceptions of the other, each fails to show its own real educational basis. Each is destructive in its criticisms of the other, but neither is constructive in its own position. Because each is right in the contention of the other's demerits, both uphold views that are necessarily wrong. Each fails to see that interest and effort are not opposite or mutually exclusive, but, as was emphasized in our study, they must be aroused and utilized together, for one is the inevitable consequence of the other.

2. Both schools misconceive interest as a condition outside of the child. Those who think that to interest is to "sugar-coat" place the interest in the subject-matter. Interest to them is not a real subjective feeling, but a fictitious process by which we hide the disagreeable aspects of knowledge and thus take advantage of the child. These people forget that interest is something within the child; its promptings come from the inner consciousness, and go out to an object. The all-absorbing question to both is, "How shall we impart knowledge?" not "What interests in the child shall we stimulate so that the child will, of its own accord, put forth its self-activity, its true personality, to make the facts and experiences we present part of itself?" This is what was meant when we said that interest is subjective, not objective; this is precisely what both schools fail to see.

3. The effort school, too, fails to see that "to make interesting" is not synonymous with "making easy." This is why its sponsors constantly employ the term "sugar-coat" in deriding the followers of the interest theory. Here, again, they misconceive interest as a fictitious process in which we mislead the unsuspecting child. Real interest is not a make-believe condition, but one in which we attempt to present the vital meaning and the importance of a subject or a task so that the child feels its own cravings realized in the work. Interest brings a permanent and natural association with the subject, and thus leads to action which may be trying and difficult. We may explain the formation of a river and lake system to a child by demanding that he image to himself a long chain of mountains with melting snow and ice washing down both slopes. The mountains are thus a watershed, which give rise to a series of rivers on either side. But if the mountains are arranged in a group which is more or less circular in form, then the water which flows down the sides cannot go very far, but is collected in the inclosed basin, thus causing lakes. We may even add a rough and misleading diagram on the blackboard. The child is nevertheless not interested, but he learns and understands what was presented. We may, however, show a good picture of the mountains arranged as suggested, or, better still, a clay model of the topography. The child is asked to construct a duplicate at home, from putty, to pour water on the top of the mountains, and finally to note the water formation. We are thus following a method calculated to arouse interest. What pains will a boy not take to get putty, to construct the model, to attain a fair likeness! The interesting method requires more care, diligence, and effort on the part of the child than the uninteresting one. The reason is obvious: we have touched on the child's inherent interest, the interest to construct. What difficulties will the boy not gladly meet in completing a bit of work in the shop! A boy building a boat will gladly listen to an explanation of buoyancy and specific gravity in order to make it float. Yet in the physics room these facts

may bore him. McMurtry tells of a class of children that went to the trouble of learning over thirty parts of a ship in order to properly complete a boat that had been begun in the shop. A girl will often resent interference and aid injudiciously offered while she is engaged in sewing a dress for her dolls, in painting a design for her calendar mount or blotter cover. Even kindergarten children trying to build with their blocks or model with the clay show the same resentment when we foolishly offer to solve the little difficulties as they arise. These are the very parts they enjoy. We sometimes spend valuable hours over a puzzle or a stupid charade. Is it because these are easy? In all these cases interest is present, for these activities are the means of utilizing an inborn, inherent yearning. A statement more correct, but which must be taken guardedly, is "To make things interesting, make things difficult rather than easy."

4. The effort theory errs again in its assumption that the will is trained by merely forcing an individual through a disagreeable activity. Because the child is made to buckle down to his ten definitions and five exceptions in grammar through fear, his will-power is not necessarily strengthened. Unless the child will willingly study the next ten rules and apply himself without direction from the outside or threat of punishment, his will is just as weak as heretofore. Increased will-power means spontaneity, free choice, and self-directed effort in the accomplishment of what is considered right. We might argue that a prisoner sitting on a stone pile making little stones from big rocks, doing what he detests but must accomplish, is having his will trained. Is he learning to love his work, acquiring that interest in it and attitude toward it which will make him seek it when his imprisonment is over? Is he not rather planning to even his score with society when released by never doing a day's honest labor? The prison labor breaks and deadens his will; it does not develop it; yet the task assigned to the prisoner meets with all the educational requisites assigned by the disciples of the effort school. The will works in that line and in that direc-

tion which interest prompts; hence it is the voluntary and the spontaneous performance of a right act which indicates a trained will.

This same school would assign difficult problems to train the will. What is a difficulty or a problem to its members? An isolated, disagreeable condition, concocted by the teacher and existing only in her mind or in the textbook. Is such a condition designed to train the will? We cannot thrust a problem upon a child merely by labeling it "a difficulty." It must be a natural condition taken out of the real circumstances of actual life. To require children to solve an example in which "a tank has three pipes, one fills it in three hours, another in two, while the third empties it in four; how long will it take to fill the tank, all three pipes operating?" may require an effort but it does not train the will. Are we presenting a real problem to our children when we ask them, "Of one hundred fifty-five cuckoos observed in three hours, forty-six black-billed cuckoos ate one thousand one hundred ninety-six tree caterpillars, and one hundred nine yellow-billed ones ate two thousand seven hundred twenty-five. At this rate, the black-billed cuckoos destroy what per cent. more than the yellow-billed?"* These are the problems the school presents to fit the child to meet those in later life. Will this training serve its purpose? Will the mere exertion of will-power to achieve the result in these artificial and impossible problems give a developed will? The situation we create in the class must be part of the child's life; its solution must be urgent, vital in aiding him to realize his goal. If the problem meets these conditions it is interesting and designed to train the will.

5. A final point in the indictment which education must bring against these two schools is the fact that both show the same erroneous conception of concentration, for both lead to a division of energy and thought which is demoralizing and devitalizing in all serious work. The psychologist speaks of a simultaneous and a successive division of energy, both

* Smith's *Intermediary Arithmetic*, p. 227.

of which he condemns in no mistakable terms. Each of these is illustrated by the one school or the other.

The effort enthusiasts fail to see that to force a child into an activity whose process and end he detests will never lead to a concentration of effort. The child goes through the prescribed activity in a most mechanical, dispirited fashion, driven like the famed "dumb driven cattle." Part of his energy and mind goes to this, the necessary evil, but the rest of his attention involuntarily reverts to thoughts and dreams that are more interesting. The aim of the effort education, to develop conscious concentration, is thus not only frustrated, for there is a simultaneous division of attention at any one moment, but it is even made impossible by training the child in diffusing rather than uniting his effort. This simultaneous division of activity not only gives poorer results and weakens the child intellectually, but has a bad moral effect, for there is a deceptive attitude of industry. Dewey brings home this point when he says, "Nor do I see how any one familiar with the great mass of school work can deny that the greater part of the pupils are gradually forming habits of divided attention. If the teacher is skillful and wide awake, if she is what is termed a good disciplinarian, the child will indeed learn to keep his senses intent in certain ways, but he will also learn to direct the fruitful imagery which constitutes the value of what is before the senses in totally other directions."

The interest advocates are not free from this type of psychological error. To them interest is a condition of learning which necessitates the intervention of the teacher to make attractive the subject which is unpleasant. Is the mind's attitude toward the subject changed? Not necessarily. Remove the pretense, the overstimulation, and the unusual appeal by the teacher, and the child finds nothing attractive about the subject. With the teacher's effort and his mode of presentation, the particular facts and knowledge are enjoyed and the mind concentrates on what is being taught. But, with the artificial condition created by the teacher removed,

the child's mind reverts from the subject in question to the thoughts and activities in which the child naturally delights, to come back again only when the teacher once more takes the lead in dispelling what is seemingly tedious. We have here, then, a series of fluctuations, of alternate waxing and waning of effort and of attention to the task, hence an attention successively if not simultaneously divided, but divided for all that.

The Truer Conception of Interest as a Mode of Self-Expression.—The truer conception of interest which is in harmony with our theory of self-activity and mental development regards interest as a form of self-expression. Since instincts are means of expressing our self-activity and inborn power and possibilities, we study interest under the instinctive aspect of the mind, a classification which the older psychologist would scoff at, but which his modern brethren sanction and approve unanimously. Let us turn to this conception of interest.

James says, "Every man has many me's. He is a hierarchy of me's. In its widest possible sense, a man's ego or me is the sum total of all that he calls his. Every man is at once a material me, a social me, a spiritual me, et al.—and when he is working for any phase of any one of these we may say that he is expressing himself." To this DeGarmo adds, "Whatever an individual does, therefore, he does to express some aspect of himself. We may say that interest is a feeling which accompanies the idea of self-expression." Interest, in the educational sense, is the pleasurable feeling experienced in expressing what we feel most, in acting out an impulse that is most urgent and craving.

The child's urgencies and interests that are constantly seeking expression and utilization can be summed up under a fivefold grouping: the child shows (a) Social and Religious Interests, which find their satisfaction in Bible stories, imaginative literature, history, and geography; (b) Speculative and Exploring Interests which we call upon in geography, nature study, elementary science, et al.; (c) Reasoning and Logical

Interests, which we utilize in number work, in grammar, in thought problems in all subjects, in all situations; (d) Artistic and Constructive Interests, which are constantly making themselves manifest in all forms of design and construction work in which children engage; (e) Expressional Interests, whose cravings give the child a keen delight in real composition, drawing, active participation in a recitation that is a clearing house of thought and suggestion.

These five main interests form the child's natural stock, his uninvested capital. Upon their proper use and exercise depends his growth. These five elements of his natural stock the child is constantly seeking to invest. Putting them to proper use, making them outgoing activities, gives a feeling of pleasure which is interest. Interest is hence merely an impulse functioning with a view to self-realization; an active attitude toward future experiences which tries to establish an identity between itself and the aim to be achieved. There is something "urgent, active, and propulsive" in this idea of interest. It leads us to accomplishments. Interest is not a state of mind to be created, but one that exists and is waiting to be called upon and utilized.

To interest a child in the division of fractions would seem almost impossible to many. "Have the child listen to the explanation and the derivation of the rule, or take the consequences. Have attention maintained by stern authority" would be the method of the effortists. No! says the modern conception of true educational interest. Create a condition in which the child must construct a necessary article, but the process is dependent upon the ability to divide by a fraction. The child, in his construction work, finds it necessary to divide five and one-quarter inches, the width of the article, into small foldings each three-sixteenths of an inch in size. How many foldings shall he make? He is interested in the construction of the object. The work cannot go on, however, until the problem is solved. The child readily sees that it is an example in division, that five and one-quarter is to be divided by three-sixteenths, but he also realizes that his

knowledge of division is limited to whole numbers and that he does not know how to manipulate fractions in this process. He becomes interested in finding out how to divide by a fraction, since his work depends upon this knowledge. Here is a true difficulty, a vital problem in whose solution he is intensely interested. The teacher should seize upon such a condition, for he will find that the child naturally interested will listen willingly and put forth effort to learn, for here is something that he must acquire if his construction work is to be completed. So, too, in all other subjects, interest is aroused by placing the task in line with the child's natural expression, by making the object to be attained coincide with the individual's desire and thus showing him its use and its urgent need. Interest hence gives us a sense of worth. Ostermann holds that we attend to whatever we feel is needed for the successful realization of our endeavors; we neglect whatever has no worth for us. Hence, the initial step in any rational lesson is to arouse a motive of need, of worth, of curiosity in the child for what we are to teach.

Relation of Interest to Effort.—Such a conception of interest in terms of self-expression, of realization of native impulses, is thoroughly dynamic and must inevitably be most intimately related to effort. In this sense effort can legitimately arise in our endeavor to give expression to what we feel most, or like most. Effort from this educational point of view has no element of toil, irksomeness, or drudgery in it, for it springs from the feeling that the desire and the act to be accomplished are in a sense identical. This is only an elaboration of the statement we made in a previous connection when we emphasized the mutual supplementary relationship of interest and effort and reiterated the advice that the teacher need not concern herself with the problem of searching for difficult tasks to train for effort. Arouse proper interest and effort will follow in plenty. Hence, we are arousing interest in history when the children ask for additional information, more recommendations of books like the "Spy," "Uncle Tom's Cabin," etc., that give color, life,

and background to our work; in geography when they gladly draw maps or model them, insert facts, read supplementary books, stories of travel in the places they are studying; we arouse an interest in the reading lesson when the children annoy us for more stories by the same author, or others like it. When our children merely listen to us, they are obedient; if they passively enjoy what we are teaching, they are amused; but to be interested they must be stirred to action, for interest is a dynamic condition which shades imperceptibly into effort.

SUGGESTED READING

(List Given at the End of the Topic, Chap. XIV.)

CHAPTER XIV

HOW TO AROUSE INTEREST AND EFFORT

In the preceding chapter, interest and effort were treated subjectively from the point of view of the pupil. An attempt was made to analyze their activities, note their causes, their motives, their natures, in a word, their psychology. But the teacher is interested in the objective side of the problem; she wants to know how they can be aroused, and by what means they can be utilized in daily class work. It is the pedagogy rather than the psychology of the subject that the teacher emphasizes. We must pass to the objective aspect of the problem.

Principles Which Govern Interest

I. By Adjustment of Method to the Capabilities of the Pupil.—The subject-matter and the method must be adapted to the capabilities and mental development of the taught. In the criticism of those who make interest synonymous with sugar-coating it was seen that to make teaching too simple and to assign tasks and problems beneath the ability of the average child deadens the mind and makes the pupils turn in disgust from the subject. Hence, it was concluded, not without a reservation, however, to arouse interest by making the subject difficult rather than simple, provided the pupil realizes that the problem is within the scope of his capabilities. The standard must not be carried to the other extreme, for work too advanced and beyond the development attained by the child will discourage, and by eliminating the pleasurable element will kill interest. Hence, we see the rea-

son for our initial assertion that we must be governed by the capabilities of the taught in presenting any lesson to a class.

The Stages of Development.—The next question which the teacher asks is, "What is the criterion by which we are to gauge, in a general way, the mental development of the child?" The standard was suggested vaguely in studying the stages of the intellectual development of the race in the discussion of the Culture Epoch Theory. The individual mind, like the social mind, passes through three stages. The first is the "Presentative Stage," in which knowledge is gained through the senses. From infancy to the age of six or seven only those things which are objective and concrete have any meaning for the child. It does not rise mentally above the actual, it is limited by reality. It is the period in which high colors attract and impress the child, in which he does not learn unless he handles, in which things are dropped to become acquainted with the sound, or carried to the mouth to be tasted.

This is followed by the "Representative Period," which seems to control until the age of about ten or twelve. Here the mind has the power to rebuild for itself what it has experienced in the past and, as was said, it can re-present what was presented. Not only can it repicture the old, but it can retain it with great tenacity. This is the period of memory and imagination. This is followed by the "Reasoning Stage," which shows its signs at the age of about eleven or twelve. It is the period in which the child is a veritable animated question mark, in which the child is not prompted to find out "what" the thing is but rather "why" it is. In the presentative stage the questions are "what," and are urged by sheer curiosity. The child takes the answer on his faith in the teacher, and shows no disposition to argue. In the "Thought Stage" the questions are prompted by reason rather than curiosity and seek origin and purpose; hence their form is "why" rather than "what."

A word of caution may be necessary here. We must not

for a moment interpret this classification to mean that reason is not present in the Representative or even in the Presentative Stage, or that memory and constructive fancy are not active in the other two stages. This division of mental development merely shows us that reason is not strong enough to be made basic in teaching before the third stage of development has been reached, and that imagination and memory are not organized and controlled to a point where they can be used with any assurance of results prior to the Representative Period.

Adjustment of Method to Stages of Development.—Since the mind passes through these three stages, it becomes the endeavor of the school to so develop some of the elementary school subjects that they show the three phases in the course of their progress through the various grades. Not only does the mind pass through these three stages in its own evolution, but it takes these three attitudes successively toward the experiences which are presented. Let us apply this concretely. We read a modern course of study in geography and we find that the study of the earth is taken up three times. The first cycle in geography teaches home geography, the land and water forms—the concrete and objective aspects of the subject. It is primarily the fourth-year work. The second cycle studies the various countries, the physical, industrial, and political aspects, the assignment of the fifth through the seventh years. Here little can be made concrete and real. The child must picture these places and learn them without objective demonstration. These are the grades when facts are emphasized and geography is taught by an appeal to the imagination. The third cycle, the eighth-year geography, studies the mathematical, physiographical, and commercial sides. The endeavor throughout is to show that life and its development are determined by the conditions of climate and surface into which the individual is born. Evidently this is not a fact period in geography, but one in which the appeal is to the reason. No new places, no new locations, are learned in the last cycle of geography. The aim is rather to

explain the cause and the importance of those taken up in the previous cycles.

Geography presented in this way arouses interest in the sense that we defined it. The child, at the end of the school course, considers memory work in geography a drudgery, but is interested in following the causes of natural phenomena and their influence upon human life. Geography, in the last cycle, is a study of man rather than of the earth; in the first and the second, a study of the earth rather than of man. Reverse the order of teaching, and interest, the feeling accompanying self-expression, is lost.

The same development is followed in history. A properly organized course of study presents the subject in three cycles. It should begin by a bird's-eye view of the subject, studying a series of men whose lives become the centers around which events are grouped. The only way to make the past concrete is to embody it in the story of human character. The child in the Presentative Stage is intensely interested in biography, because it is calculated to appeal to his mode of comprehension by making the work objective. We know that children are interested in the Bible, yet the events are in the remote past and deal with events and subjects far removed from their actual experience. The reason is found in the fact that the story in the Bible is developed around a series of men rather than events. Hence the history of the fourth year should be a study of the striking personalities in our country's life.

The second period, from the fifth through the first half of the seventh year, should be an appeal to the imagination and the memory, the representative powers of the mind which are then alive, by means of a detailed study of the dramatic events, their sequence and their time. This should be the fact and picture cycle of history. But the end of the seventh and the whole of the eighth year should be occupied with a third study of American history and civics, emphasizing the progress of our national life, the growth of democracy, the principles of Americanism, and giving special at-

tention to cause and effect of events; this is hence the thought aspect rather than the fact aspect of history. This should be the period when the children are required to study the textbook and extract the meaning out of its printed page, write special essays on suitable topics after simple reference reading. Such a treatment arouses true interest, for does it not lead to action? does it not utilize and express the powers most active during this period? does it not lead to effort, not mere passive enjoyment?

II. The New Point of View.—It is our common experience that variety is a most necessary element and sure guarantee of interest. Monotony is the chief enemy of interest; it deadens the mind and robs a subject of the interest which may be inherent in it. The teacher readily grants this platitude, but wonders how variety can be introduced into the drill and grind of elementary school teaching.

Review vs. Drill.—Much of the difficulty arises from the fact that we do not see enough possibilities in the review lesson and thus confuse it with the drill. In careless speech we often use drill and review as if they were interchangeable. They are essentially different in aim, spirit, and method, and should therefore be kept apart. Let us differentiate them in concrete lessons.

Drill and Review Differentiated.—A class has just completed Germany in its geography work. During the previous week Spain was the topic. In taking up each of these two countries the teacher followed the causal series carefully. The teacher is now anxious to go over the material presented in dealing with Germany. Two courses are often possible. The teacher may ask questions along the line of the causal series, bringing out again location, size, shape, surface, climate, resources, industries and occupations, products, exports and imports, etc., of Germany; the children now repeat what was given them in the former lessons and are forced to follow the old order and the stereotyped system. This is a repetition or drill lesson. A second plan is not to repeat the facts of Germany in the same way in which they were taught, but

to ask the children to compare Germany with Spain. The children now recall the material presented, but, instead of trying to reproduce the facts as given, they seek to place them in contrast to Spain. This is a Review Lesson. Or, again, the teacher may approach the review lesson with the question, "Why is Spain a dying country and Germany a progressive one?" Compare surface, climate, position, coast, resources, etc., and see how, in each case, Germany has the advantage and that Spain occupied the front rank among the nations only so long as she had colonies to fill her treasury and supply her needs. Why is the one a drill lesson and the second a review?

Drill attempts to fix in the mind through constant repetition. Its appeal is primarily to the memory. Constant repetition is dull and kills every spark of life and interest because of the monotony inherent in the method. Bagley tells us, "The purpose of the drill is to insure the functioning of experience as habit." By this he means that through drill we seek to make a fact or a process habitual so that, when needed at any special time, it can be recalled without much thought or trouble. The drill lesson tends to mechanize our knowledge.

Review, from its etymology, means a new view of an old idea. A review is a teaching rather than a testing lesson in which a subject is recast in an endeavor to better digest and assimilate the knowledge. A review appeals to thought and requires no exact reproduction. Further illustration may show its true character.

Review and Drill Illustrated.—Having taught Japan, how can this country be reviewed in the next geography lesson? Surely not by rehashing the causal series, but by asking, "Why is Japan the Great Britain of Asia?" All the important physical and commercial facts must be called up by the children in an attempt to answer the question. The facts of Japan are fixed in the mind by an appeal to thought rather than to memory. In reviewing the Sahara Desert we do not repeat the old fact of size, shape, kind of surface, tempera-

ture, storms, etc. All that is necessary can be obtained from the children by the question, "What dangers would you expect to meet in crossing Sahara?" The discussion of the various tragic possibilities and their reasons gives a complete survey of the essentials studied. The children tell of dangers of starvation and thirst; the cause of these brings up the dreary waste, the oases and their scarcity. As they conceive themselves lost on the desert sands, misled by the mirages, stricken by the sun's rays, buried in the sand storms, we have material to recall the size of the desert, its climate, its treacheries, and all the peculiarities that make it the region that it is. Thus, each of these dangers would suggest one or another and finally all the facts that the children need carry away with them. The lesson is interesting, thoughtful, free from the grind of the drill.

If a class has completed the topic in history, "Causes of the War of 1812," there is no need of recasting the facts again in the same order in an attempt to give them permanence in the mind. To repeat "right of search," "impression of American sailors," "interference with commerce," etc., deadens a topic that interested children before. But the review lesson is the teacher's salvation. We begin by asking, "Why was the War of 1812 called the war for industrial or business independence?" The children must recast all they know of the causes of the war and note that each cause was a commercial rather than a political one. We can go over these facts a third time and still maintain a freshness and an interest in them if we ask, "What are the differences between the causes of the War of 1812 and those of the Revolutionary War?" A review and a consideration of the causes of each war will show the industrial and commercial nature of the former and the political character of the latter. "How would you justify the statement, 'The War of 1812 was the second war of independence'?" is another central topic around which a review lesson can be given, and the important facts brought home without the tedium of the drill.

In our early nature-study lessons we are told that in

teaching an animal the order should be (1) recognition and name, (2) characteristic movements and actions, (3) color and parts, (4) food, (5) uses, (6) care of young, (7) home, etc. After an animal has been taught through this series of topics, little interest in it can be aroused in the children by repeating the string of topics to impress the facts on the mind. Instead of a drill try the review and center the lesson on, "What must I know if I am to make a pet of this animal?" To answer, the children must tell us to be sure to know its name, its behavior, its food, its home, its care of young, etc. Here the facts are brought up again, presented in a new light, from a different aspect, and, although nothing new has been taught, the lesson elicits an interest. This, too, is a review, not a drill.

The Essentials of a Good Review Lesson.—The review, we have just seen, differs markedly from the drill. Its purpose is better organization of material, deeper insight, and thought. The main characteristics of a review lesson are four: First, it seeks to emphasize the essentials only. It concerns itself with underlying principles. Second, it tries to present old material from a new aspect. It gives old knowledge from a new viewpoint. Third, the element of novelty in the review does not try to add new facts, but is designed to deepen the thought and give a more thorough grasp. Fourth, reviews should not be reserved for the end of a term or the conclusion of a large topic. A review is in order at the end of a sub-topic, at the conclusion of any important point in a subject.

The Essentials of a Good Drill Lesson.—Despite the strong case that can be made out in favor of the proper review, one must not speak disparagingly of the drill. It has its limitations, it usually brings with it a tedium which militates against its popularity and ability to interest, a monotony that makes it a pedagogical soporific. But the drill is absolutely essential. To neglect it means that the necessary basic facts will not "function as habit." With a little care and attention we can offset the adverse effects of the drill. At

all times the drill lesson must have two parts. First, there must be an explanatory period, in which the facts to be memorized and habituated are rationalized and justified to the mind. Second, the drill proper.

A good drill has certain qualifications which must be incorporated at all times. It must be motivated. Children must be made to feel a need for a perfect mastery and control of the facts. Let it be supposed that a drill is to be given on a table in arithmetic. In the explanatory part the teacher shows the children the units, inch, foot, yard, and, by directing the children's activity, elicits that twelve inches equal one foot; three feet one yard, etc. With the table thus derived, mental examples are given out rapidly and the teacher calls for speedy solutions. The children are evidently not ready. But when the children are asked to explain we find that they can obtain the results if sufficient time is allowed. The pupils are asked to account for their inability to solve as rapidly as required, and they readily tell that this is due to a lack of familiarity with the items in the table. They are now asked to suggest a remedy and are thus led to see that the next logical step is the drill. The ensuing lesson will not become all-absorbing, but, because its need is felt, it becomes intelligent and rational.

An additional means of counteracting the lifeless accompaniments of the drill is to be careful of its technique. We must infuse speed, call upon children promiscuously, vary the statements, and bring in the unexpected.

Thoroughness.—Another means of introducing variety into teaching is through thoroughness in presentation. But this, too, is a term much misused and abused. What do we mean by thoroughness? Are we thorough when we have amassed a greater number of details? Is the class reading "Thanatopsis" more thorough when it takes up the meaning and derivation of every important word than the class that is interested only in the main theme and its development? The answer seems to be decidedly negative. Thoroughness does not depend upon the number of details because the sum

total of the details will not make the subject. The subject is an outgrowth of the detail. If a child understands the individual lines of Longfellow's "Children's Hour," does he know the central thought and underlying lesson of the poem? Thoroughness does not mean emphasis on detail, but neglect of unrelated detail and emphasis on the main points. After the child has mastered one point of view, thoroughness demands that he be given another. The more points of view a child gets, the richer the lesson becomes, the more thorough is its development.

In teaching the causes of the American Revolution to an eighth-year class, a more thorough presentation must be given than to sixth-year children. This does not mean that, instead of mentioning six acts which led up to the final break—the stamp act, navigation act, right of search, etc.—six more should be added, e. g., Hatters' Regulation, Prohibition of Nail Manufacture, etc. If this be done the point of view remains the same. The conclusion cannot be altered by these new data. To make the lesson more thorough the teacher should present to advanced pupils the English side of the controversy. For the first time the child will realize that the war was caused, not by sheer British cruelty and a fiendish delight in levying taxes, but by the fact that the colonists and the mother country happened to have opposite and irreconcilable views on what is meant by representative government. He will recognize, too, that the British stand was just as sincere as the Americans', and that there was considerable strength on their side. All this gives a new outlook and a new conclusion. To give another point of view makes the lesson more thorough. To merely add details to old material makes the lesson more cumbersome, but just as incomplete.

An added point of view leaves the child better informed and with a more liberal conclusion. Thoroughness is therefore qualitative, not quantitative. It is attained when we have grasped the main thought and the underlying principles, when we have seen and understood the interrelations.

It is intensive, not extensive. The proper interpretation of details gives the underlying principle, hence the vital point in thoroughness is to be sure that the details chosen are characteristic, typical, vivid, rather than numerous. The teacher who has presented a subject from as many viewpoints and has established as many associations as possible for the child's age has been as thorough as circumstances permit. Thoroughness is therefore a teaching condition which brings variety in its wake, and arouses that kind of interest which leads to thought, to effort, to a voluntary strain upon consciousness.

III. The Principle of Novelty.—Instruction must be concrete; it must present the problem of the lesson from the practical and the novel point of view. It is obvious that mere talk and abstractions are not only beyond the child's mind but are not calculated to gain attention and interest unless the child's games and toys are beyond recollection. For these reasons, teaching must be enlivened by experiments, blackboard drawing and diagrams, pictures, anecdotes, and the like. To a moderate extent, the spectacular and the unexpected must be presented. Although simple and obvious, this principle very often fails to receive application in cases and conditions that offer opportunities for such treatment.

In teaching a masterpiece it is held that the life and the literary importance of the author are part of the work. Teachers usually begin the study of Julius Cæsar with a life of Shakespeare. This is logical and natural, but not calculated to gain interest. There is little or nothing in the literary life that interests a boy. The warrior and the adventurer have a fascination for him for reasons that are obvious. But there is little to really interest the average eighth-year pupil in the life of Shakespeare except that he was a poor boy who became famous. Then, too, a boy's respect for Shakespeare's achievements is none too great. He did little more than write books which the boy is compelled to study. But, instead of adopting this order, teach the masterpiece, or even a short literary selection, first. After the story has been

properly read or told in the first reading, interest and enthusiasm are at their highest. At the end of a first reading of "Julius Cæsar," in which interest is centered in the story exclusively, the child experiences the same delight as in an alluring melodrama. After such a first reading we should study the life of Shakespeare, the poor boy, who, with so little education, learned to write such a wonderful story. To begin the study of a masterpiece with the author is to teach it from the adult point of view, to give the new and the unexpected first, means to see with the child's eyes, to feel as the young mind feels.

The same principle applies to every physics lesson, yet many fail to see the opportunities for its embodiment in this work. A teacher, whose topic for the period with a seventh-year class was air pressure, began with a clear, well-developed explanation of the facts, the cause and extent of air pressure, the fifteen pounds to the square inch, etc., and finally described an experiment to illustrate the fact. But the period came to a close before the experiment was well on its way, for the children had consumed most of the time in note-taking. Instead of this order, the procedure should have been reversed. The end should have come at the beginning. The teacher should have brought into the room what the boys call a "sucker," a bit of rubber with a nail through the middle and a string attached to the outer end of the nail. The rubber is moistened, pressed hard against a window pane, and is thus held fast when the air is expelled. By pulling the cord the nail makes an aggravating sound against the glass, and the boy accomplishes his end—plaguing the unwary shopkeeper. Boys can be seen in the streets holding up stones of considerable weight by such a device. The teacher might have placed a card on a small wide-mouthed jar filled with water and then inverted it. The card sticks and the water does not spill!

In presenting the topic, "Center of Gravity, Stable and Unstable Equilibrium," much enthusiasm and dynamic interest can be aroused if the lesson is begun with the last step

of the method whole, the "Application." A boy is called out to the front of the room and told to stand erect with feet together. The teacher pushes him and he topples over at once. He seems to show no resistance. A weaker boy is now called to the front. He is told to stand with feet apart. The teacher now pushes twice as hard but the lad resists very easily. Here is a fact useful in boxing and all forms of contests of strength. What is the principle that explains this phenomenon?

In beginning a lesson on levers, a teacher brought before the class a low wooden horse and a long board and arranged them in a "see-saw" game. He announced that "Mary," the smallest girl in the class, would lift "John," the heaviest boy. The contrast appeared ludicrous to the children. The boy and the girl were called out, and were made to take their places on the board after the teacher arranged it. As it was released, up went the boy's end and down the girl's. The merry faces lengthened with surprise. Genuine amazement followed mirth. The teacher need only add, "Why do these things behave in this way?" and he is repeating the question which every child is asking himself. With their natural interest of curiosity aroused, the teacher is controlling the children's efforts and activities.

IV. The Teacher's Attitude Toward the Subject.—The teacher's enthusiasm is a factor which must not be neglected in enumerating the causes and means of interesting children. Interest is primarily an emotion. Emotion begets emotion; interest is therefore contagious. Although one may not be scientifically inclined, association with a friend who is constantly manifesting such an interest soon finds one asking questions and seeking explanations of scientific applications. So, too, companionship with an artistic or an intellectual friend soon finds us duplicating the interests of our friends. These circumstances are only additional illustrations of the principle of unconscious social imitation. The sincere interest of the teacher soon pervades and permeates every class-room activity. It is a common truism that a sin-

cere and enthusiastic teacher, however poor, can always arouse an interest in his or her favorite subject. The child soon catches the spirit and the thrill of life. But what more than listlessness and inattention can a teacher hope to arouse who cold-bloodedly and disinterestedly plods his way wearily through the lessons of the day!

V. Motivation.—A final, but by no means unimportant, means of arousing an attitude of interest toward school work is the emphasis of the value of what is taught. The child may not consciously or deliberately ask the teacher, "What is the use of what we are learning?" He may not even confront himself with the question. But unconsciously the mind takes the inquisitive attitude of "what is this for?" Proper teaching must forestall this feeling by showing, where possible, the personal side of the work. If there is any one conclusion that can be drawn from the theoretic study of the subjective side of interest it is the statement that interest gives a feeling of a sense of worth; that whatever appears to us as useful and necessary in society calls forth an expression of our self-activity and prompts to action, for interest is an active attitude toward experience. In introducing an arithmetic, a geography, or a history lesson, the teacher must endeavor to indicate the practical, the real value of the contents of the subject taught.

Many teachers will take issue with such advice. They take the lofty attitude of "knowledge for its own sake." But aside from its use in social life knowledge is worthless. The severest criticism that they can urge against the utilitarian view is that it is personal and individualistic. This is true, but it is not necessarily a view that is unsocial or in the least unmoral. To be useful does not mean to be remunerative in dollars and cents. A thing is useful because it gives pleasure, increases happiness, gives a broader and more liberal outlook. The utilitarian aspect of knowledge guarantees a definite, practical standard by which to gauge the subject-matter in the curriculum, and leads to the elimination of much that is unnecessary.

The conclusion for the teacher is obvious. Every lesson must begin with a conscious endeavor to show the child the need he has, personal or social, of the experience that is to be taught him. There must be a sincere attempt to motivate the task, to interpret it in terms of the child's urgent, active self. The pupil must know precisely and definitely why his attention, his whole mind, his very self, should be given to the teacher and the lesson.

Application of the Principle of Motivation.—Can this doctrine of motivation be applied to the common, every-day school lesson? A few illustrations will serve to answer the question.

Grammar Lesson: "The Present Participle."—The lesson being an introductory lesson on participles we concentrate on the present participle. How can we motivate such a lesson? The answer is simple if one recalls that grammar finds its justification as a school subject primarily in the fact that it teaches us to use correctly forms of speech in which people often err. Begin, therefore, with the children's compositions. From the last week's work select a number of examples of short, crude sentences used in sequence, sentences that are childishly simple in looseness of style and structure. These are put on the blackboard. A composition on Theodore Roosevelt provoked the following from a child: "He saw the enemy. The Spaniard was making his escape. Colonel Roosevelt took careful aim. He fired upon the soldier." Read this to the class, somewhat slower than ordinarily, trying to emphasize the general clumsiness and the amateurish effect produced by these short sentences in sequence. Now ask the children what adverse criticism they have to offer. Let us suppose that nothing offered is to the point. Recite a few lines of a typical beginner's reader, thus: "I see the cat. The cat is black. The black cat is fat." Now reread the sentences taken from the composition, and the criticism is elicited that the shortness of these sentences makes them too simple and childlike. What can be done? Combine them. Call for suggestions. The answers are varied.

"Theodore Roosevelt saw the enemy, who was trying to escape. He aimed his gun and fired." Suggest that "saw" can be changed to "seeing" and it can all be included in one sentence. Call for answers until the class gives, "Seeing the soldier, who was trying to escape, Roosevelt raised his gun and fired." Ask the children to compare the original four sentences with this new one. Treat two or three sets of simple sentences in the same way, each time eliciting from them the superiority of the new construction. Now ask, "What word improved each of these groups of sentences?" The answer, the "ing" words, is easily obtained. "Why would it be valuable for us to know something more about them?" "Let us study them now."

The lesson is therefore begun and developed after the child has seen the functions and the values of these new words. When the lesson is over, convince the children that they were right in their estimate of these new words; give them their compositions, let them read them over and see where they can improve them by combining simple sentences through the use of a present participle. Every good grammar lesson should begin with, and end in, the compositions written by the children.

Arithmetic Lesson: "Stocks and Bonds."—Arithmetic affords excellent illustrations of the principle under discussion. Here, too, motivation is simple, even in a topic as removed from the sphere of the child's experience as "Stocks and Bonds." To motivate, reproduce as nearly as possible the actual circumstances of life which make the use of stocks necessary. Imagine that child A's father has two hundred dollars, B's three hundred, C's six hundred. There is an unusual opportunity for a business investment in the purchase of a factory for two thousand dollars. What shall we do? "Form a partnership," is readily suggested by some in the class. This is done and the children see that the total is only eleven hundred dollars. What do men actually do in business? The children do not know, but realize that this is a real condition in life that would find them helpless. As the

teacher suggests the solution of this almost impossible puzzle, the children listen, for there is reason for their attention. The teacher then has the class write out sample shares, each valued at one hundred dollars, and thus the factory is divided into twenty parts. A's father buys two shares, B's three shares, and C's six shares, each depositing two hundred, three hundred, and six hundred dollars, respectively. The three stockholders now go in search of people who will purchase the remaining nine shares and thus organize a company. Why will people invest? What will they receive if the factory turns out a success? What if it fails? etc., are questions whose discussion leads to the development of words and phrases like "par," "at a premium," "dividend," "at a discount," etc. The company should actually be organized in class, shares sold at par, and dividends declared. Little need be said directly to the class about the need of this knowledge. The fact that we are actually organizing a company in class, buying and selling shares, reproducing life as it is, is sufficient to impress upon the child the utility of the topic.

Manual Training: "The Making of a Dovetail Joint."—Let us turn to a subject so entirely different as manual training. If the teacher is anxious to teach his class in woodwork how to make a particular joint he can give out necessary wood, explain how the material must be measured, how the tools used, what general precautions are necessary, and then let the children proceed. Ask the children what they are doing and they can reproduce instructions fairly well. Ask them why they are making such a joint and they have no reason. The order has been given from him on high and theirs is not "to reason why," but to "do or die." This is a fair illustration of the average school motive, blind execution with obedience prompted by fear.

Change the character of the lesson. Instead of making a joint of two bits of wood to illustrate a technicality in manual work, let the children begin by making an article they deem necessary; for example, "a picture frame." The wood

is measured and the work planned. As they try to make one part fast to the other the teacher shows his model, its perfect and easy fit. Let him ask, "What is our next step?" and he will receive the prompt answer, "Cut such a joint as is shown." "Can you do so?" The answer is negative. Hence the teacher suggests that the frame be put aside for this lesson and attention be given to this necessary technicality. Ask the children now why they are cutting up two pieces of wood and cutting into them a joint, and they will readily tell you how necessary this practice work is for the construction of their frame. How changed is their attitude toward the lesson now that they are actuated by real motive and perceive the need of this experience!

Advantages of Motivating a Lesson.—This method of motivation can be carried over to all subjects. What teaching advantages will the teacher find who begins by convincing his pupils of the need they have for the experience he is to give them?

1. The task is rationalized. Every assignment, every lesson has meaning and vitality when interpreted in terms of life's needs. The subject-matter, the teacher, the school are no longer necessary evils whose sole object seems to be to rob youth of its pleasures.
2. The child does not apply himself because blind obedience has been instilled into him. There is a willing application to the work at hand, for it is deemed necessary in future adjustment.

The child who works because a motive is perceived feels no fear as the reason for his application. Where children can see no need and no use of what is given them, they refuse to exert themselves for the end. If they do, it is because it is perfectly evident to them that the teacher is the absolute master and his word is law. Fear for the consequences makes the children realize that obedience is the surest means of minimizing the pressure of the school and its tasks.

3. The problems of interest and attention are solved when the child works because he perceives a need. What teacher will ever receive the concentration, the close and tireless application, the complete mind, the all-absorbing interest which the child evinces in solving the manual difficulties in the course of building a snow fort? When the experience we offer our children in the school is made as real and as necessary in the child's existence as the problems which arise naturally in the outside activities in which he is engaged, then will school lessons receive the same serious, constructive mental activity that is bestowed upon the snow fort, the building of a wagon, or the repair of an old air rifle.

Is Motivation a Panacea for All Pedagogical Ills?—Since motivation in teaching brings all these invaluable advantages, is it not a panacea for all pedagogical ills? Is it not a pedagogical patent medicine remedy, guaranteed to remove all class-room ailments and teaching difficulties? There are limitations to the use of motivation that are serious and worthy of consideration. Let us turn to them.

1. It is not possible to evoke in the child a motive for all school tasks. The child has seen little of life and has had no real vital experiences with life's needs. It is frequently possible to base the lesson on the life of the child and reflect its use to him now or in the inevitable future. But suppose this cannot be done, what then? His teachers know that his future life will present needs for this specific experience, but because the child is a child, because all he knows of the world is limited to what his last five or six years have brought him, he does not deem it necessary. Shall the teacher dismiss the lesson on that account? What motive can we give the child for learning seventy-five per cent. of the facts of history, facts that are old, dead, moss-covered? The adult realizes that, though the facts may be past, they are not dead. They show the traditions, the spirit, the strivings, the yearnings in our national growth. To un-

derstand America and Americanism to-day we must look at the present through the glasses furnished by the past. The child cannot be made to see this. Shall we therefore omit all of the history of the past?

What motive can be aroused in children for learning sixty per cent. of the facts concerning the location of rivers, mountains, capes, plateaus? Their world is a narrow one, limited by their physical environment. The possibilities of the pleasure of future travel are too vague to serve as a present motive.

What need can be shown the child for paying attention to the early parts of grammar? It is a comparatively simple matter to reflect the use of grammar when the advanced work is taken up. All of that part of the subject can be applied. But what motive can be established for teaching the preposition, the declarative, or the imperative sentence to beginners in grammar?

The problem simply reduces itself to one of didactic teaching, viz., the need of obeying and learning because the teacher, in his superior wisdom, deems the subject necessary. This reason, though not a motive, must suffice. Myra Kelly tells of a Jewish lad who worked in the East Side sweat shops pulling out stitches from finished garments. The lad was paid by the amount he pulled, so much for each dozen. One day he became suspicious of his employer's arithmetic and, fearing that he was being underpaid, decided to go to school and learn to add pay slips on "finished pants" during the so-called "slack season." In due time the lad made his application to the clerk of a public school and, although older in years than the average child in the first year, was put with them as their equals intellectually. The first lesson of the day, music and opening exercise, he bore with some patience, although not without disappointment. Evidently the teachers wanted to give them "enjoyings" before work began. Manual training came next. This was followed by a calisthenic drill. The patience of our little "baistin'-puller" was taxed to a point beyond endurance. He rose in

his wrath and announced his intentions of leaving the institution where learning was so shamed. The teacher tried to argue, but the lad refused to stay for a further waste of time. "I came to learn how to add checks on the pants, not to make with the hands and the feet," was his plea. We know that it is exceedingly important to "make with the hands and the feet," but we cannot always show our children the reason. The matter reduces itself to the simple dictum,—the children must learn to bend to authority and obey, even if they cannot see the need in their limited lives.

2. Very often motive can be shown, but the creation of the conditions that would make motive arise would produce an artificiality similar to learning because of authority. Thus, the functionalists would teach no word in spelling that the child has not misspelled in his composition or his letter. Before any word can be taught, therefore, it would be necessary to have an exercise in which the child is led to misspell it. If we are going to teach division of one fraction by another we must have the conditions arise where it becomes necessary for the child to divide one fraction by another. Suppose the condition does not arise? Then have a construction exercise in which it becomes necessary for the child to lay out four and one-half inches into eighteen parts; required to find the dimensions of one part. If the condition arises naturally, no better beginning is possible in motivating such a topic. But to force an unnatural condition to arise to make a topic seem necessary, produces an artificiality no better than teaching without motivation.

3. To hold that all lessons must be supplied with a motive is to forget that the mind is naturally acquisitive, that it craves for expansion, for enrichment of content. The instinct of curiosity is too well developed in children to need elaboration here. It explains why children pay attention to facts that often bore us, why they listen with open mouths and staring eyes as we narrate the stories of history, despite the fact that they have no perceptions of their need.

4. Too great a use of motivation is dangerous because it

may lead to an overemphasis of the material aspect of human needs. It may forget that there is a purely æsthetic factor in life that craves satisfaction. If we are to teach only those experiences whose needs we can show as arising in the child's life, then why teach ancient folklore, with its interesting and beautiful mythology? Why teach literature? Why music and drawing? We must not forget that there is a spiritual ego that is to be fostered and nurtured. There are instinctive cravings and longings that must be satisfied, even if we cannot show the definite, concrete, specific need.

Principles Governing the Stimulation of Effort

Turning to the other side of the problem we ask, "How can the teacher train the child in the use of effort?" In our endeavor to see their mutual supplementary nature, we treated effort and interest together, as the beginning and the end of the same activity. But, aside from the question of interest, we know that the ability to exert effort, to concentrate, to put a strain upon consciousness often becomes a separate and independent problem, when a sheer necessity must be accomplished. How can we help the child to cultivate its power of exertion, and train him to use effort when the pressure of the occasion demands it?

I. Appeal to Mediate Rather Than Immediate Interests.—

Psychology distinguishes between mediate and immediate interests. An interest in which the desire and the end are wrapped up in one is called an immediate interest. Thus, playing a game, enjoying a picture, listening to a clever tale or to a bit of gossip, are in themselves pleasurable. When the end is not in the desire, but comes after it, we have mediate interest. In the attainment of a goal we have a process and an end. When we must go through an uninteresting process in order to attain a desired end, we have mediate interest. The child who learns his letters or his phonics to be able to read the interesting stories that his teacher tells the class is actuated by a mediate interest; so, too, is the child who stud-

ies to procure a good report card or the music lover who endures the tedium of patient practice to develop ability in the use of his instrument, or the artist who goes through years of drudgery for the necessary technique.

The Herbartian education teaches that we must waken mediate interest by setting up goals which are attractive. The sculptor works with assiduity and perseverance to create that which is an objective and tangible embodiment of his ideal of beauty. The teacher can make the child duplicate this persistent effort by holding out a reward, the attainment of success and distinction, the acquisition of something useful as goals toward which the pupil should learn to strain his faculties. The more attractive the goal the greater is the exertion of the will toward its achievement. To emphasize the value and the need of knowledge as was suggested is hence a means of setting before the child a desirable end whose attainment is spelled out in terms of effort.

II. Limit the Time for Assigned Tasks.—When work is given in the class room it should be assigned so as to demand the maximum concentration on the part of the child. Bagley, in his "Educative Process," says, "The capacity for work is the capacity for sustained effort, it means concentration, organization, and permanency of purpose. The intense desire for activity is not in itself sufficient. Children and savages possess this alike. Not activity alone but sustained and directed activity has been the keynote of human progress." Hence, he urges that there must be no day in the class room in which the child is not compelled to give his entire undivided attention to some definite work.

How can this be carried out in class-room practice? Wherever possible set a time limit and hold the child responsible for the accomplishment of a reasonable amount of work in a given period. To give an examination and allow as much time as is wanted defeats one of its important aims: the cultivation of undivided attention. The child works conscientiously through the first quarter of the paper, then he gazes about, or perhaps at his neighbor's paper; if his genius for

mischievousness is aroused his seat mate will soon be disturbed. After every answer or two he takes this relief. Not only should every examination have a time limit, but it should allow no margin. To complete the work the child must, for the time being, shut out the memory of games and sports from his mind and apply himself to his assignment.

In arithmetic lessons it is a common practice to give out one or two examples to the class and then wait until almost every child has completed them before proceeding with the explanation. The "A" children take about one-half the time of the "C" and "D" pupils. While waiting, those who are well behaved as well as bright put their hands behind their backs and straighten up into a painfully unnatural position, ready to receive a word of commendation or an extra mark in conduct. Those who are bright but are not good have, of course, active minds, full of ideas and schemes. Usually these work themselves out in action and the discipline of the class is disturbed. Our conception of discipline and teaching is surely above the "hands-behind" stage. The bright children should not be placed on a par with their slower classmates and be forced to waste half of the arithmetic period. If the children are placed in groups we can assign examples numbers 1, 2, 3, 4, to "A," numbers 1, 2, 3 to "B," and numbers 1, 2 to "C" and "D." Each child's time is well occupied, there is no opportunity for the mischief which idle minds discover or the ease which the shiftless covet. Each child must give maximum concentration to the assigned task. Exercises of this kind tend to make "buckling down" a habit.

James advises, "Keep the faculty of effort alive by a little gratuitous exercise every day. Do, every day or two, something, for no other reason than its difficulty, so that when the hour of dire need draws nigh it may find you not unnerved and unstrained to stand the test."

III. Appeal to the Child's Love to Meet Difficulties.—The teacher should make constant appeal to the innate craving to overcome obstacles and to enjoy the glory of success.

Difficulties which tax our ingenuity, but which show some chance of solution, attract us. Therefore such difficulties, which the child realizes are within the pale of his capabilities, must constantly be presented to him, because they prompt severe and sincere effort. It may be that this is a purely egotistical feeling, and the joy of success is only the pleasure of personal glorification. But it is nevertheless true that he who is ever ready to meet life's emergencies is the real hero. Ability to measure up to life's sterner needs is the measure of man's worth in the game of life.

Conclusion.—Interest then is the lubricator in the process of adjustment. Effort is the impelling force that takes us over obstacles and makes progress the result of our activities. Interest coupled with effort introduces an element of play into our work and makes for the highest efficiency in teaching.

SUGGESTED READING

- ADAMS. *Herbartian Psychology Applied to Education*, Chap. 10.
ARNOLD. *Attention and Interest*.
DE GARMO. *Interest and Education*.
DEWEY. *Interest as Related to Will*.
FITCH. *The Art of Securing Attention*.
HORNE. *Psychological Principles of Education*, Chap. 23.
JAMES. *Talks to Teachers*, Chap. 11.
OSTERMANN. *Interest in Its Relation to Pedagogy*.
RIBOT. *Psychology of Attention*.
SULLY. *The Teacher's Handbook of Psychology*, Chap. 7.
THORNDIKE. *Principles of Teaching*, Chaps. 5 and 7.

B. THE INTELLECTUAL ASPECT OF THE MIND



INTRODUCTORY

Intellectual Development

Our study has, thus far, conceived the mind as a vast storehouse of mental energy with inherent tendencies in definitely fixed directions. This is the basic conception in the theory of self-activity and the explanation of mental development and education as a process of realizing possibilities from within, not by introducing conditions and knowledge from without. Although worded differently, this view agrees with Davidson's conception of education as a "process of transforming the original nature of man into his ideal nature."

The mental phenomena of which the mind is capable can be grouped under two heads, (1) those which occur with little or no intervention of the individual's consciousness and require almost no conscious direction, and (2) those that are the result of consciously determined action and therefore demand conscious direction. In the former consciousness of purpose is marginal, in the latter it is focal or central. To the first class belongs the discussion of instincts as in-born tendencies toward particular ends, and of the common educational forms such as imitation, emulation, interest, and effort. We must now turn to the latter phase of mind, that of conscious mental activity. The succeeding topic is hence a study of the intellectual aspect.

Meaning of Intellectual Education.—A common definition of the education of the intellect is the development of the mind's power to know the truth. The intellect was designated, in an earlier reference, as the selective agent in life. Its function is therefore to differentiate right from wrong, just

from unjust, to indicate the path that leads to our best welfare and development. But this definition, though not faulty, is insufficient, unless we add to this selective function another, viz., the acquisition of knowledge. The natural, if not the basic, function of the intellect is to acquire knowledge, to bring to each individual the facts necessary for a complete life. The acquired, or second, function of the intellect is really a result of education, viz., an ability to ascertain the truth, the exactness, the validity or the correctness of meaning of that knowledge which the intellect has acquired. In other words, the intellect first perceives the experiences in the outside world, then it proceeds to enrich them, reading meaning and significance *into* them as well as *out* of them. First to perceive the world, then to make the perceived world the conceived, that is the complete scope of the intellect's office. The intellect then is the selective agent in life, giving us our necessary knowledge and adding richness and fullness to our psychic content.

Aims in Intellectual Development.—In instruction the teacher endeavors to make an appeal to the intellectual activities of the mind. The results are many and varied. But from a more definite point of view he seeks to leave the child rich in his treasure of (1) knowledge, (2) power, and (3) skill. What does each of these aims include? Knowledge seeks to give us the facts necessary for complete living and enables us to better adjust ourselves to an ever-changing and often hostile environment. Power is necessary to gain control of those forces which lead to new and original knowledge and possessions. Skill completes the trinity, by making us dextrous in the manipulation of power and knowledge, so that they may best subserve our most vital needs and interests. To tell a child that Pike's Peak is 12,365 feet high is to give him knowledge; to show him that twelve is the number of months in the year, and three hundred and sixty-five the days, gives skill in handling the fact; but to show the child where to find such material, so that he need not burden his mind with needless data, is to add to his

power. Show the child the law of proportion and you have increased his stock of facts; require him to solve a great number of examples and you have given him the skill which reduces the problem to a mere mechanism which he solves in little time; but let him grasp the meaning of ratio, the similarity between it and a fraction, and you have added to his power, for now he can evolve the law of proportion himself, should he forget the mechanical rule.

Relative Importance of Knowledge, Power, and Skill.—

To stop for a moment to enquire which is the most important member of the triple aim is not a purely academic procedure. Its answer will be a standard of measuring methods of teaching, for that method which serves the highest aim must in the very nature of the case be considered the best, while that one which makes its appeal to the lowest must be judged accordingly. Knowledge we may call the primary aim of teaching, for here the school tries to give the child that heritage which nature would otherwise give through instincts, intuition, or experience. The individual is the recipient of a treasure, which is the result of the trials and tribulations of others. Idle taking, mere receiving, does not stand high in the scale of life. Skill we may call the economic or efficient aim, for it endeavors to enable the individual to attain the greatest result at the expense of the least effort. Energy and vitality are thus saved; a greater surplus of energy is thus reserved for further striving and greater accomplishments. Skill thus makes for economy and efficiency in human endeavor. Power we may call the final aim, for, in its attempt to give the individual the control of those forces which lead to new and original data, it seeks to make the individual self-directing, mentally independent, and self-sufficient. It tries to elevate him from the place of mere follower and receiver to that of initiator and discoverer. We may well ask, "Does our modern school not err in its disproportionate emphasis on study and teaching?" In the usual five hours of the daily session one finds four and one-half devoted to direct instruction and only one-half to

systematic study. This shows an emphasis on knowledge rather than power, a lack of a clear perception of the instructional ideal, to make the child independent of the teacher.

These three aims of instruction with this estimate of their relative importance are modern in educational conception. Older education could not agree on the proper and proportionate emphasis to be given to each of these. Hence, it either emphasized knowledge, fact acquisition, on the one hand, and gave rise to the Acquisition School, or it sought to present all those forms of knowledge the learning of which would tend to strengthen the powers of the child's mind, and thus became responsible for the Disciplinary School, whose sole desideratum is mental development. The one did not see that a fact apart from its use, a fact which does not contribute to our needs, has little to commend it in an educational system. The other failed to realize that power and discipline could not be acquired aside from subject-matter, and, even if they could, power inapplicable is empty, it is blind energy going to waste, functioning for naught. The two aims are interlinked and part of the same process of instruction, for each loses its value when alone. It is for this reason that we view the aim of teaching as an inseparable composite of knowledge, skill, and power.

CHAPTER XV

PERCEPTION: HOW DOES THE MIND ACQUIRE ITS KNOWLEDGE?

Psychological Basis of Perception.—All our information of the outside world comes through the sense organs. These bring us the materials upon which the self-activity reacts and which it works up into knowledge. It is for this reason that the old psychologists called the sense organs "the gates to consciousness," "the windows of the soul," or by other figures of a similar nature. A sense organ is a modified and specialized development especially adapted for the reception of excitations from without. Thus the eye is designed to receive the changes in the ether waves, the ear the wave motions in the air, the skin changes in temperature and pressure. Each sense organ transmits its peculiar excitation to its center in the brain, along afferent nerves which carry incoming messages. When the stimulation reaches its respective brain center, the mind becomes conscious of the changes in the outside environment. The result is a sensation. Psychologically speaking, then, the sense organs bring impressions of the outside world; the stimulations which accompany these, result in sensations; but the reaction of the mind upon these, the simplest interpretation or recognition of the stimulations, results in percepts. Let us see the differences for education between sensation and perception.

Sensation.

1. Simplest psychic reaction to the stimulation of an afferent nerve.

Perception.

1. Outward reference of a sensation. It is the process of localizing sensations and referring them to their outside cause.

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|-------------------------------------|-------------------------------------|
| 2. Gives only a sense impression. | 2. Gives knowledge of the world. |
| 3. A mere feeling of consciousness. | 3. A comprehension and recognition. |
| 4. Mind passive. | 4. Mind active. |
| 5. Difficult to recall. | 5. Easy to recall. |
| 6. "Acquaintance with objects." | 6. "Knowledge of objects." |

Because sensations are so extremely simple psychically and give no knowledge, we do not concern ourselves with them in education. As a matter of fact, just as soon as we become conscious of our sensations they are no longer sensations, but rather percepts. A pure sensation is practically an impossibility with a mind beyond the infant stage. Hence the problem of perception is the essential starting point for the teacher.

Influence of the Psychology of Perception on Teaching.—Modern psychological knowledge of perception has had a marked influence on methods of teaching. Old teaching made its appeal only to the eye and the ear, through words, spoken or written. Most teaching was from the book and by didactic explanation. Science was taught from the printed page without experimentation, illustration or objects. Many of us can recollect how we were taught the tables of weights and measures. The page on which these were printed was given by the teacher and then memorized verbatim through repetition; an education of words. The next step in the progress of teaching demanded an appeal to the eye and the sense of touch. This brought a change in the old order of teaching. We have learned to show the pint and the gill measure, to have the children actually empty the one into the other and establish for themselves the relationship, "4 gills = 1 pint." In this manner the children find the necessary items of the entire table. To-day, therefore, the order of teaching is "things, thoughts, words," whereas in the preceding method the child learned the "words" in the table, then

applied them in examples and got the "thoughts," but rarely, if ever, did he see the "things." We realize to-day that the units must be brought into the class, that the tables whose units cannot be shown concretely should not be taught in the elementary school. In the past we were content with discussing the units and waiting until the child in his later experience would meet them.

This new tendency in teaching, to appeal to more than one sense, accounts for the change in style of the old textbooks with their dull, uninteresting, pictureless pages, to the modern illustrated editions, which were first published only a generation ago. In arithmetic we find not only an explanation of the processes but that examples of the type of " $\frac{4}{5}$ of my money=\$1.60, how much have I?" are solved by the aid of a diagram. The child does more than repeat in parrot fashion "if $\frac{4}{5}$ of the money=\$1.60 then $\frac{1}{5}$ is $\frac{1}{4}$ of it." He must actually see this relation and show it graphically. Our grammar, too, shows this same influence, for analyzing by diagram, practically unknown a generation ago, is now used almost universally in preference to the long, involved written analysis. So far have we developed in our knowledge of perception that our ideal to-day is to appeal to as many gates to consciousness as possible, for the more senses that contribute to a percept, the richer, the greater in meaning, the deeper in content, and the more lasting will it be.

An avenue to consciousness, extremely useful and valuable, but much neglected, is the muscular sense, the feeling accompanying all muscular movement. A percept is a fusion of more than the five senses of which we commonly speak. A very important contribution is offered by the muscular impression that is known in psychology as the kinæsthetic sense. The greatest part of our physical being is made up of muscle. Every movement, therefore, entails a muscular sensation. These muscular sensations accompanying a movement stay in the mind and are just as important elements, if not far more so, in the formation of a percept than many of the others coming from other senses. This explains why

some people remember spelling only when they write it, not when they repeat it over and over again. Children who invariably fail in their attempts to learn a memory selection often show marked improvement when told to write it as well as to con it over.

There are many who hold that visualization is the surest method of learning to write a language. If the child can be made to see the word with his eyes shut, then the spelling will be remembered. But a blind person can be made to spell very readily, provided we allow him to trace the letters in the air or on a surface. From actual experimentation we know that the kinæsthetic or muscular element is a most important sense contribution with very many people. Since spelling would not be necessary if we did not write and is of almost no importance in reading we must teach spelling by writing, by making its execution habitual. Hence when children have spelled a new word in concert they have made the least important appeal. Each new word should be written a number of times in the air and on paper, for the object is to habituate the writing of the word, not the "calling off" of its letters. Children who can spell words orally with great ease and speed often hesitate when asked to write the word. Children who can write the word without thought or trouble, but who hesitate in spelling orally, are nevertheless good spellers.

The muscular sense is important for other reasons. We say that every impression should be followed by a corresponding expression because the expression deepens the impression. This is true because in all forms of motor expression we get the added sensation of movement. Then, also, in the use of any of the senses the muscular sense is inevitably involved. In using the eye, the ear, the sense of touch, movement of some kind is an accompaniment. Hence the kinæsthetic sensations are wrapped up in all the others and become basic in them. Dramatization in history and literature is another means of trying to bring this added sense into the composite of meaning. Objective teaching then means not an appeal to

a sense but to all the senses with a particular attempt to utilize the muscular one. Because of the richness and permanency of a percept resulting when all the gates to consciousness have been opened, "appeal to as many senses as possible in all teaching" has become a basic and oft-quoted law.

Meaning of Sense Training.—Since the senses are basic in knowledge getting, we often hear the expression, "education must train the senses." . . . "Manual training, drawing, kindergarten work, music and the like are valuable because they train the senses." What is meant by the expression, "sense training"? The usual superficial answer makes this mean an improvement of the eye, the ear, the tactile organ, etc. Manifestly this is absurd, for this is impossible and far from the scope of the teacher's work. It is the function of the physician or of nature. In education, "sense training" does not mean improving the sense organ, but refers rather to an improvement of the mind, to an enhancement of its interpreting ability, so that whatever the sense organs bring will mean more than heretofore. By training the ear, we mean giving it practice in listening to music, so that in the future it will not be the ear that will become a better organ, but the mind that will become quicker in detecting differences in tone. The person who cannot match colors finds after practice, such as is given in the kindergarten, that he can more readily discriminate shades of difference in one color. His eye, the sense organ, is no better than it was before, but the mind has been trained to react more surely, accurately, and speedily as a result of the exercise.

Causes of Better Interpretation.—It would be wrong to say that there is no physical change in sense training. There is, but the change is in the brain structure rather than in the sense organ itself. Since each sense has its own respective center in the brain we must seek the changes there. The causes for this improved interpretation following sense training are three; their natures may be physical or mental.

1. The brain cells are enlarged and thus become capable

of better and more efficient work. Just as exercise enlarges the cells of the muscles, so, too, repeated appeals and exercises in interpreting what its sense organs bring, enlarge the cells in the sense centers. A large cell is a more capable agent for work.

2. Sense training quickens the reaction of the nerve cells, because of repeated actions of a similar nature in the training process. The reason is obvious. Use and repetition make each succeeding action more facile. The child who first learns to manipulate the strings of the violin is slow and clumsy. With practice the cells in the finger muscles acquire a plasticity, a specialized sensitivity which makes them respond to the same stimulation ever so much faster. Exactly such an effort is produced in the brain. Because the same kind of stimulations are brought to the same sense center, its cells attain the power of speedy and easy reactions.

3. In all sense training mental associations between the experience and its interpretation are formed, so that no sooner do we present the sound, the color, the form, to the senses than its interpretation or meaning is instantly called up because of the intimate connection established. The person who was never in the woods hunting game finds himself at a great disadvantage in the beginning. But after practice and training for a considerable period, his mind is more active and alert, the brain reactions occur faster, so that the mere rustling in the trees, a squeaking sound, or the noise of crushing of dried leaves will, by associations formed, bring up the habitual cause, the animal. The mind is thus in a state of habitual expectancy; this mental preadjustment makes him see where the inexperienced cannot, hear intelligently sounds meaningless to the unpracticed ear. Hence sense training, because of these two brain changes and this mental association, results in the acquisition of better mental powers for the interpretation of what the senses gather in the outside world.

Why Should the School Give Sense Training?—Sense training is an important and much emphasized topic in our

educational literature to-day. But it is by no means new. The sense realists form an exceedingly important group in the history of education, for in the beginning of the seventeenth century we find Mulcaster beginning a series of names that later includes Bacon, Ratke, Comenius, Locke, Rousseau, Pestalozzi, and Froebel. They insisted that knowledge should be derived chiefly from the senses, that the subject-matter of education should be natural rather than artificial, that concrete objective nature rather than the formalism of language should become the basis of the curriculum, that the school should train the power of perception of the realities rather than load the memory with facts and achievements of the remote past. The demands for sense training, whether in the past or in the present, are based upon a number of reasons; an examination of them in detail may help in realizing its importance. Why then should we give sense training?

1. An education of the senses *deepens knowledge*, and gives a more *exact* and *truer insight* into it. Sully, in his "Teachers' Handbook of Psychology," says, "Distinct and sharply defined impressions are the first conditions for imagination and exact thinking." This quotation emphasizes (a) that sense perceptions are the basis of knowledge, (b) the more accurate our perceptions, the more accurate our knowledge. We often trace faulty judgments and reasoning to faulty perceptions. This we can see in almost any class in the teaching of many of our school subjects. A few classroom experiences may serve to clarify the point and bring conviction to the student.

Children who can find the volume of a cube, of a room, the cubical contents of a bin, the cost at x dollars per bushel if it measures $12 \times 9\frac{1}{2} \times 6\frac{1}{4}$ feet, were asked "How many edges will a cubic block whose contents is 1 cubic foot have?" Only sixteen and two-thirds per cent. knew positively. They were then asked to show the length of an edge of such a cube. The answers varied from six or seven inches to a distance limited only by the utmost reach of the children's arms. Only forty per cent. were correct. When asked how many feet

there were in the width of the blackboard, only twenty-five per cent were approximately correct. These results are poor but far from exceptional; they are more or less typical. An order like "Draw, free hand, a line about nine inches long" given to a fifth year class will show amazingly incorrect judgments to those unfamiliar with such results. Children who solve a problem like "Find the number of cords of wood in a pile of timber 33 feet 6 inches x 5 feet 4 inches x 5 feet" cannot go to a corner of the room and chalk out a space on the walls and floor that would be occupied by a cord of wood. Over eighty per cent. of a 6A class had no idea of the approximate size of a cord, yet all knew that a cord of wood is one hundred twenty-eight cubic feet. Questions like "would this room hold a cord of wood?" brought only confusion and guesses. Some would not even commit themselves on the question "would a cord fill the assembly room?" "One hundred twenty-eight cubic feet" were words, empty sounds with no sense percepts back of them. Of what use can such knowledge be? It means nothing to children. The answer, found after long, tedious multiplication and division, is a hollow result attained after a stupid process of solution. The child who gives it is placed in the position of the ass in the lion's skin, for he is speaking in a language foreign to him.

It is safe to say that more than fifty per cent. of the children who are to-day computing examples in mensuration, papering, plastering, finding areas and volumes of all kinds, are indulging in incorrect judgments, and have no perception of the units they are juggling. What we need before solving these long, meaningless examples are drills like the following, designed to make knowledge real: "Hold your ruler between your finger tips, drop it, notice the distance between the two fingers. Keep this distance, measure the width of the desk; of the seat, their height from the ground, etc. Place the ruler in front of you on the desk, have your forefingers touch; slowly separate them until the distance equals a foot!" This should be repeated a number of times for the muscular

sensation. Having appealed to all the senses that we can, we ask, "How many times will the ruler be contained in the length or width of the teacher's desk, of the blackboard, of the height of the window, of that door, etc.?" Let the children guess at first, and then teacher and children actually verify by measuring. Measure one or two objects in this way each day. Teachers who have not tried this will be surprised at the improvement in judgment. The reason is obvious; the perceptual basis is there, many gates to consciousness have been opened.

So, too, before solving the number of cords of wood in a woodshed $X \times Y \times Z$ feet, the child should be made to see that a pile $8 \times 4 \times 4$ feet is a cord; an oblong 8×4 feet is chalked out on a corner of the floor and a height of 4 feet is indicated on the wall. Let the child see how many seats would have to be removed to place a cord of wood in the vacated space. Such drills would make a cord a fact, not an imaginary quantity.

A child should be given the height of his school, of two or three common buildings in the city. Thus, knowing that the Singer Building is a little over six hundred feet in height, he has a standard for measuring new distances. When told the height of Niagara Falls he realizes that it is not a fabulous distance; when he learns that a mountain is thirteen thousand feet high, the fact means something, for twenty Singer Buildings, one on top of the other, would be necessary to reach the summit. Some such procedure should be the method applicable to all tables of weights and measures. Where the method does not apply, the table is not for the elementary school. Such teaching would obey the order, "things, thoughts, words," but our results to-day indicate that the teaching has been conducted back end forward; it emphasizes "words," "thoughts," but has omitted "things." We cannot doubt the dictum, "no perception, no meaning," nor can we fail to see the truth in the initial statement, "Perception deepens knowledge, gives a truer and more exact insight."

2. *To Acquire the Habit of Observation.*—We shall see the meaning and method of observation under another head shortly, but it will suffice here to note that sense training would develop the powers of observation so that we would see more in our immediate surroundings. The city-bred, whose life naturally affords less opportunity and makes less demands for sense training, often walk about blind and insensible to the countless beautiful and interesting elements in their environment. What a host of things the naturalist sees where we see nothing! Horne says, "We are primarily meant to look outward rather than inward, to be a friend not a stranger of the universe." The truth of the statement appeals to us all, yet we know how often we walk about in darkness. It is as if we lived in a many windowed house, advantageously situated to command the best possible view of a wonderful landscape panorama and had wilfully drawn the shades and then wondered why we saw nothing, why beauty did not stream into our dwelling as it did into others. To neglect sense training is to draw the curtains over our mind's windows, to keep out of our souls the light and the beauty that should pour into them.

3. *It Makes for the Most Interesting Kind of Teaching, Objective Teaching.*—In our discussion of the means of arousing and sustaining interest, we saw that elementary teaching must be made objective in order to awaken and maintain a dynamic interest. Without the former we can hardly expect to obtain the latter. Sense training hence means that objective teaching will be emphasized; we therefore have the reason for our statement: interest will almost invariably accompany lessons designed for sense training because of their objectiveness.

4. *It emphasizes a Study of the Outside World.*—This is important for three reasons: (a) To really understand higher forms of knowledge we must have a basic acquaintanceship with the outside world. When science began to make disclosures contrary to theological and philosophical teachings theologians and philosophers began to elaborate and explain

their views so that our inner perceptions would not be contrary to our sense perceptions. However theoretical an individual may be, he must appreciate the importance and the meaning of the external world, the practical environment, so that his theory will square with practice. The tendency of modern thought and education is to discourage idle speculation, knowledge for its own sake. Knowledge must be applied, it must be for man's sake. The modern philosopher laughs at his mediæval predecessor indulging in sterile speculations and boasts of a new development, pragmatism, a philosophy which seeks to make fact and theory one and the same. Sense training emphasizes the concrete, the practical, the useful.

(b) The second reason for laying stress on the outside world is to prevent too great an emphasis on the thoughts concerning the self. Our thoughts must be either about things outside of us, the non-ego, or about us, the ego. The individual who sees no beauty and finds no meaning or pleasure in the outside world must turn his thoughts on himself. He is sure to become self-conscious, egoistic, self-analytical, and even morbid. Too deep a personal insight is bad. The much extolled advice of Socrates, "Man, know thyself," has its natural limits. To overstep it is dangerous. The self-centered person is generally not a happy individual. Such people are bitterly discontented. These individuals are mental dyspeptics; they cannot digest themselves; another mental diet is essential. Too much self-analysis leads to gloominess bordering on the morbid and indicates an unhealthy mind. Many forms of dementia, nervous breakdowns, and melancholia are preceded by a period of constant self-thought and self-analysis. We must learn to get away from ourselves. Sense training, by emphasizing the outer world, tries to inculcate in us the attitude of the botanist, the zoölogist, the nature lover. These people are usually alone, yet they are lost in their interests in the outer world and rarely, if ever, indulge in thoughts that are self-centered.

(c) And finally we may add that sense training is an

aid in the acquisition of a love for the beautiful. Throughout this study the endeavor has been to show that sense training tends to introduce us to the æsthetic element in life. By opening up the windows of consciousness it tends to make us like a dewdrop in the sunlight: small, insignificant in itself, yet resplendent in all its glory, reflecting within the beauty and the power of the majesty without.

How Can the School Train for Better Perception?

Having seen the meaning of sense training and the need of a proper perceptual basis in teaching, the immediate question is, "How can we best appeal to the senses in our teaching?" We have two sets of aids (I) those afforded by the curriculum, and (II) those which result from proper methods of teaching.

I. The Curriculum and Sense Training.—The proper subjects must be introduced into the curriculum, otherwise the teacher has not the means whereby to make this appeal. The old systems of education emphasized the humanities, the study of language and history, the study of the things and thoughts of the past. Evidently little sense training could be given. For this reason a second principle of the modern curriculum, realism, was embodied at the demand of the sense realists. Their efforts are responsible for the introduction of nature study, elementary science, geography, and the manual arts, not alone for their utilitarian value, but because of the discipline which they afforded in the training of the senses, for they deal with things of the present. To-day education seeks to emphasize as much of this realistic tendency as possible, and even introduces the appeal to senses other than the auditory in the language lesson, when children are asked to illustrate graphically the content gained in reading or to dramatize the sentiment and the action involved. The more effective means which the teacher has at his command for giving sense training is through—

II. Proper Methods of Teaching.

(A) *By Observation and Experimentation.*—Sully, in his "Teacher's Handbook of Psychology," says, "To observe is to look at a thing closely, then to take note of its several parts and details." From this definition we see that observation is a series of acts of perception in which the order is, from the general mass to the parts, from the vague total to its distinct constituent components. Hence, observation is well-regulated acts of perception for a definite purpose. From the teacher's point of view experimentation is its direct opposite. Let us turn to the contrast.

Observation.

1. The student is a passive watcher, seeing cause, effect, or both.

2. The teacher must lead the observations by guiding questions and suggestions. The child, left to itself, may "look" but fail to "see." It is not unusual to ask a child to study a spider in a glass jar and, when the allotted period is up, to have him report "It creeps" as the sum total of his observations. The number of legs, shape of mouth, peculiar organs for spinning the web, these are neglected altogether. If they are to be noted by the child they must be elicited from him by a series of questions especially designed to achieve this result. The child is thus directed in observation.

Experimentation.

1. The student is an active agent. He changes the cause to note a new effect.

2. The teacher's work is minimized. He gives the necessary directions at the beginning of the experiment and the child is the initiator in the entire process thereafter. The child thus becomes master in experimentation.

3. It gives, at best, a more or less superficial aspect of what is being learned.

4. The knowledge gained is not so permanent because fewer senses are appealed to in the course of the lesson.

3. It gives a deeper insight into the knowledge acquired.

The facts acquired are more permanent, for the appeal is to a greater number of senses. The especial emphasis on the muscular sense helps as a means of fixation.

Conclusion for Experimentation in Elementary Teaching.

—But mere experimentation without observation is a useless procedure; observation without experimentation, on the contrary, is a very ineffective mode of getting knowledge. Hence the ideal method of instruction must utilize both, since they are mutually interdependent, mutually supplementary. This simple conclusion must be remembered because the elementary school teacher, especially in the lowest primary classes, feels that experimentation is a process of learning that is reserved for the high schools. For this reason a large number of opportunities to bring it into the grade work is lost. Aside from the formal physics of the elementary school, where can experimentation be employed? There are innumerable opportunities in the nature study of the earlier years. The children should be encouraged to plant the common hardy seeds that will grow even in the soil in a box on a tenement window. They should be required to watch these in their growth. The nature study period should be spent in listening to a recital of what is happening to each child's plant and comparing the behavior of these with the one in the class room. These reports may be written and kept in a notebook if deemed necessary. We often hear the little tots telling their teachers "a plant needs air, sunlight, moisture, and warmth." This bit of information is required by the syllabus, and is therefore learned; but where did the children get it? Evidently the teacher is the source of this

knowledge. Why can the teacher not get it from the children? If they planted a number of seeds at home, and placed some in the dark and others in the cold, kept others in places with no air and neglected to give some moisture, this conclusion would have been the children's own. At a later lesson a number of children read their observations, and because they correspond, the teacher can lead the children to the conclusion that these four requisites are absolutely essential. The children enjoy such work, and not only is their stock of knowledge enriched but they are gaining in power, in ability to find facts for themselves.

Development of Observation in Children.—It is interesting to note the development of the powers of observation in young children. Dexter and Garlick, in their "Psychology in the School Room," give the results of their experiments in observation with children. The first set of trials was conducted with children of three and four, who were just emerging from the period of infancy. The results were recorded in the form of drawings of common things and animals used as models in the experiment. The very best of them show: (1) no idea of number; the horse has from two to nine legs; (2) the arms are always omitted, but the feet never; (3) no idea of sequence or order can be found; (4) no conception of size is manifested; (5) details, like eyes, nose, ears, neck, etc., are omitted. These results are typical and show: (1) that in observation people see the general mass and outline with fair accuracy. This accounts for the fact that all children inserted the feet and omitted the arms, as the general shape was thus not destroyed; (2) perceptions are not regulated unless we train the individual to perceive systematically; this explains the absence of necessary details, such as the features; (3) visual perception is far from satisfactory as a sole means of acquiring knowledge. The teacher must not rest content with merely showing the object or its picture. Other senses must be appealed to, for their contributions serve to correct erroneous observations due to the use of one sense.

The second group of experiments was conducted with children ranging from five to ten years of age. Here the objects chosen for drawing were the same, but the results were, of course, better. However, the errors were often just as stupid, for two-thirds of the drawings of profiles showed the full nose and both eyes. The authors note that "the average child's observations were not only inaccurate, but capricious and one-sided." . . . "A figure of a woman hopelessly wrong in the position of arms, legs, etc., nevertheless depicts in minute detail the feathers in the hat and the buttons on the shoes. . . . It is perhaps unnecessary to add that the artist was a girl."

From these results one realizes how defective are the sense impressions and their interpretations, and how unsatisfactory they are as a basis for knowledge, unless the teacher realizes the need of training the senses, and of appealing to as many as possible, so that each may be a mutual check and correction upon the others.

What Is Good Observation?—This conclusion naturally leads to an emphasis on objective teaching. But it must be remembered that objective teaching is not object teaching. The attempt to give sense training through object teaching rather than objective teaching led to the inauguration of a system of "object lessons" that were mentioned in greater elaboration in an earlier connection. The teacher presented a common object to the class; the children sensed it and then enumerated a long list of qualities, such as hard, transparent, fragile, heavy, etc. The primary aim was to see as much in each object as possible. These old object lessons proved not only dull and uninteresting but of little value in training for observation. The child who can see twice as many details as another is not necessarily a better observer. The girl who draws a man, indicates the buttons on his coat, but inserts two eyes in a profile, and gives a hopelessly disproportionate representation, sees much but not those things that make her a good observer. Observation implies the noting of essentials, of characteristic and differentiating qual-


ities which determine function and use. The child who tells us that the squirrel has a head, eyes, nose, ears, tail, is by far a poorer observer than his neighbor who notes the peculiar shape of the mouth and concentrates all his observation on the teeth and the animal's mode of feeding. The one sees what is worth while, the other sees much more, but what is useless or accidental. Good observation is functional and qualitative, not quantitative.

It is essential to remember that what we observe must lead to something vital about the object studied. There must be a goal which makes each succeeding act of perception follow a definite order toward this end. Noting all the qualities of a bit of glass, e. g., hardness, smoothness, square in shape, heavy, thick, etc., leads to nothing and shows no system. But emphasizing its transparency and its fragility and neglecting all else is good observation, for these are the qualities which determine its use and its function. The old object lessons were not only isolated, independent, fitting nowhere, and having absolutely no logical and necessary relation to any of the school activities, but they also failed in that they did not differentiate necessary from unnecessary qualities. Observation must never be an independent, unrelated process, but rather incidental in a lesson, a means to an end far higher than itself. Let the child observe a bushel and a peck to learn that four pecks make one bushel, the various land and water forms in the clay models and in nature, the flowers and specimens of the nature study—these show acts of observation for a purpose. It must be the necessary end, the acquisition of some form of knowledge, rather than the means or the process, which should be emphasized. Because observation in the object lessons is the very opposite in character they are being abandoned rapidly in this country, although they are still in the height of pedagogic fashion elsewhere.

Psychological Elements in Observation.—It is the common experience of teachers and parents that children's observation is as defective as has been seen in the experiments cited.

They are constantly drawing what is not before them, describing what is not present, and neglecting what seems to be literally staring at them. These erroneous results may be ascribed to a fault in one of four elements. (1) *The Perceptual Element*. This is the accurate noting of what is presented before the senses. The perceptual element is defective when the senses bring inaccurate reports of what is before them or when the mind misinterprets what they contribute. (2) *Attention*. The object must arouse an interest and a desire in the child to perceive it, study it, note its details and parts. Teachers will find it a help in the drawing lesson to ask the child to describe orally what he sees. In drawing a rectangular basket the children were told to study the handle and describe the places of union with the body of the basket and the general direction of the lines. A typical description elicited was, "It begins at a point a little beyond the middle of the side facing me, runs up vertically, then across to the other side, and vertically down to the body of the basket again." The mind is thus forced to travel slowly and note what a rapid survey of the eye fails to see. (3) *Previous Experience*. It is obvious that one's past experience is a determining influence in efficient observation. The person who has never looked into a microscope sees little or nothing in his early studies through it. The student sees little that is of chemical importance as he looks into the test tube during his first laboratory hour. Previous similar experience trains the senses so that they can "see" intelligently where they "saw" nothing in the past. (4) *Bias of Feeling*. Our interpretations of the perceptual elements will be modified to a great extent by the attitude with which we approach the subject. In all observations, we often see what we want to see. He who detests physics sees nothing in the experiment. Yet how much such a person may see in the "round of petty concerns and irritating cares of daily life." . . . "To observe accurately is to put aside prepossessions, to restrain the imagination, to direct the mind with singleness of purpose to what is actually present before

the senses." To neglect any one of these factors means poor observation.

(B) *By Individuating a Lesson.*—Since the mind's first acquisition is the percept, the recognition of particular individual things, teaching must begin by emphasizing the individual rather than the general notion. In presenting a general topic, therefore, it is essential that the teacher should always individuate the lesson, that is, teach it analytically. Let us make this concrete. Before giving a lesson we must select the special points to be taught and present these individual facts one by one, properly stressed, explained, and illustrated. For illustrative purposes let the topic in geography be the "Products of the United States." It is almost inexcusable to present a long list of the products and ask the children to learn it as a whole. The better plan would be, after the list of products has been inferred from conditions of soil and climate, to ask each child to draw an outline map of the United States, then consider each section by itself and connect it with its most characteristic product. Thus: Maine, New Hampshire, Vermont—lumber; Pennsylvania—coal; Gulf States—cotton; Lake States—wheat; Prairie States—cattle, etc., etc. In addition the children should insert below each product a diagram representing the part which the United States supplies of the whole world's output, thus: COTTON , the shaded section representing our output. Each percept would be taught through the visual and muscular as well as through the auditory sense by this individuating process. In the first case the children simply memorize a given list; it is a blind and meaningless memoriter recitation. But in the plan suggested each product is associated with its own section, with the physical conditions of soil and temperature that determine it. In reciting the children try to visualize the outline map, and read off the products as they see them in each locality, rather than, in parrot fashion, to give the list learned by heart.

The Type as a Means of Individuation.—A second and more common method of individuating a lesson is through the use of the type in teaching. One usually speaks of a type in composition, type of colony, type of river, of flowers, or of animals. The word type, as used here, has a distinct and peculiar meaning in teaching. A type is a concrete particular thing or action embodying the characteristics of a whole class. In teaching the term "mountain chain," the Rockies may be used as a type. Although they form only one particular chain, they manifest the common characteristics of all mountain chains. A type is a least common denominator of knowledge, for it enables us to think of a variety of things in terms of it. It bridges the chasm between the individual thing, which is concrete, and the class notion, which is abstract.

McMurry, in speaking of the use of the type in teaching, says, "The value of the type lies in its representative power." Since each type can call up its class, he urges, "Every avenue of knowledge should have a type at its gate." This simple dictum is not without its advantages when applied directly in teaching. In learning and reciting definitions, the child should always be required to give a good type or example first and then the formal or informal statement of the definition. If the teacher asks, "What is a preposition?" the child's answer should take the form of "Sit on the chair near the table; *on, near*—a preposition is a word used, etc." If the question be "What is a prime number?" the answer should be, "*Seven, thirteen, seventeen*; a prime number is, etc." "What is a continental island?" brings the response, "*Cuba*—an island which, etc."

The child who is taught to have a type ever ready with each definition, or principle, or law, can retain knowledge longer and more easily. Without the type he must remember the abstract wording and the meaning back of it. In one case the child goes through a process of thoughtful construction; in the other, one of verbal reproduction. The type crystallizes the whole matter; it forms one precipitate of the es-

sential qualities; it makes knowledge concrete and hence makes it simple to handle.

(C) *By Motorizing the Presentation.*—Psychology teaches that all perception is due to brain habit. A concrete illustration may make the matter clear. A person is told to look at a table and, without having any special object in view, he is asked to describe it. He says that it has a square or a rectangular top, four legs of equal length, etc. But as a matter of fact he really sees only three legs, and these, surely, are of unequal length; the corners are far from right angles. Evidently he said he saw what he did not. This phenomenon finds its explanation in the fact that, in past experience, the table was learned with its true characteristics. The present sensations aroused the habitually correct reactions and the person described the table as it is rather than as he saw it. Psychologically speaking, one's perception of a table is due to his brain habits.

Let us apply this to class teaching. It is obvious, therefore, that in arithmetic, in geography, in nature study, it is not enough to show the object or to study it from a picture the first time it is presented. The children should learn the divisions of land by actually creating them in the manual training periods. Too often the child who recites "an isthmus is a narrow neck of land connecting two larger bodies, etc.," has little meaning back of the definition in spite of the diagram on the board. A teacher complained that the class believed that an island floated about, otherwise how could it be entirely surrounded by water? Had the children actually learned the island by modeling it, by motorizing the thought, then they would have had a truer conception of it. They would have seen that, since the model island did not float about, because its base was fixed, the real island is stationary for a similar reason. The children who raised the question were not necessarily stupid, as the teacher complained.

The Changing Sense-Appeal Sustains Perceptions.—Angell says, "We cannot continue to perceive an object beyond

a moment or two, unless we perceive it in a new manner." In trying to establish a percept, therefore, we must keep changing the appeal that it makes to the senses. This explains why we gain the most knowledge from a picture during the first moment of the presentation. Look at any fixed object in the room. At the end of a moment or two the mind involuntarily attempts to leave it and the image becomes blurred. If the object is changing we can keep watching it much longer. The thing perceived, therefore, to continue being perceived, must change its appearance. This psychological fact has its lesson for the teacher.

Learning to perceive by "doing" would give a new element to what we present. In teaching a flower, we must let the children separate it into its component parts, and put them into the proper position again to regain the shape of the flower. It is not sufficient to have the children merely look at it if they are to obtain a good percept of it. In the workshop this principle, "Learn to know by doing," applies equally well. In the processes of creating, measuring, cutting, fitting, etc., we are constantly perceiving from different points of view, seeing the same thing from a different angle. Hence those things that we learn to know through the process of creation, by actually doing them, always mean more to us. The experienced man is always more proficient because he has actually been doing the thing that the inexperienced person has read about or has seen, but not done. Teaching by motorizing is hence a means of increasing the mind's power to perceive.

Dramatization an Elaboration of the Principle of Motorization.—Motorization, when applied to subjects like history, literature, civics, and the like, is called dramatization. When it is used within proper bounds it becomes exceedingly valuable in giving a clearer perception of meaning. The children should be required to produce in action the ideas which they gained in these subjects. This is the most effective means of discovering errors and misconceptions which the children carry away. In reading, for example, the teacher should

demand not only correct vocalization but proper bodily expression as well. The child who reads "Father Felician, with faltering step, ascended the altar" should be made to execute the movements. Then there can be no doubt that he has grasped the meaning. "And he spoke in a faltering voice, 'what is this that ye do, my children,'" should be read in the faltering, solemn voice of the priest. This insures a proper grasp of "faltering" not only by the child who is reading but also by those who listen and watch. Every primary teacher who insists on this motorization in the reading of "The Three Bears" can testify to the spirit and enthusiasm as each child is made to read in the sharp, shrill voice of the little bear, the grumble of the middle-sized bear, or the gruff voice of the big bear. A class of foreign-born children whose language is exceedingly limited cannot be made to understand the meaning of shrill, grumble, gruff without this appeal to the senses. No child can feel the story and lose itself in it unless we insist on its motorization or, the more pretentious term, dramatization.

In teaching civics, especially in the upper classes, excellent results can be obtained by motorization. A topic assigned by many courses of study is "How a Bill Becomes a Law." No amount of explanation of the origin of the bill, of its introduction, how it is referred to the committee and reported out, read three times, voted on, passed to the next house, through the labyrinth of legislative action, will make the meaning quite clear. Nor will the child really perceive the process. The best method presents the topic through motorization. Divide the class into two houses, with their respective heads, one elected, and the other appointed by the teacher. Have the bill introduced by one child and let the rest pass it through all the necessary steps. The lesson is alive; it teaches the process by appealing to action; it gives a percept that is clear, vivid, and lasting.

Motorization is an effective means of teaching, primarily because it makes its appeal to the muscular sense. The previous discussion emphasized this gate to consciousness. We

must stop to reinforce this conclusion by noting what a dominant factor it is in all acquisition of knowledge. Leading psychologists offer plenty of corroborative evidence on this point. The following are only a few of the typical views. Stout, in his "Analytical Psychology," says, "Every two elements whatsoever, connected together in consciousness, are so only because they have motor effects in common." King, in "Psychology of Child Development," tells us, "The perceptual process is penetrated through and through by experiences of movement. Passive sensations serve only to guide and define motor sensations."

Through an application of observation and experimentation, individuating the lesson and harping on the type, motorizing the presentation whenever possible, we appeal to the senses and seek to give a reliable perceptual foundation on which we can build the child's later mental structure.

Over-objectiveness.—In applying the theory emphasized in the doctrine of perception, the usual error many teachers make is to overemphasize the objective presentation. Generally speaking, there are two conditions which justify objective teaching. The previous study traced the development of the child through the presentative, the representative, and the thought stages. When the pupil is in the first of these phases, the stage in which only the real and the concrete have meaning for the individual, objective teaching is practically the only possible and proper method of presentation. Then, too, it was said that the mind, in acquiring a new subject, takes these three successive attitudes toward it. Hence, in teaching the elements of a subject, in giving its introduction, we must be objective and concrete. Therefore the general law in teaching is that primary percepts and concepts must be taught objectively; not all percepts and concepts, but only those that are initial and basic are the primary ones in any subject. To teach objectively in the upper grades, when we are giving the advanced principles or the application of the basic laws of a subject, is as unpedagogical as to give an abstract presentation at the very be-

ginning. It is part of the disciplinary effect of the work, part of the strength and power resulting from teaching and study, to enable the child to deal in abstractions, to get away from the concrete and the actual. Over-objective teaching weakens the mind by making it unnecessarily dependent on the real, by not utilizing the mental powers in the representative and the thought stages.

SUGGESTED READING

ANGELL. *Psychology*, Chaps. 5, 6 and 7.

BOLTON. *Principles of Education*, Chap. 17.

DEXTER AND GARLICK. *Psychology in the School Room*, Chaps. 4, 5, 6 and 8.

HORNE. *Psychological Principles of Education*, Chaps. 7 and 8.

CHAPTER XVI

APPERCEPTION: HOW DOES THE MIND ASSIMILATE NEW KNOWLEDGE?

Introduction.—The doctrine of perception in teaching seeks to answer the question: "How does the mind carry out its first function, viz., to gain the necessary facts?" It was shown how the sense organs gather all the necessary excitations from the outside world and present this raw material to the mind. The next question must therefore be: "How does the mind gain knowledge out of these sensations?" "How does it read meaning and intelligence into this sense material?" "How does it assimilate what comes into it through its various gates?" The answer and the explanation lie in the doctrine of apperception.

Meaning of Apperception.—A clear conception of this vital process can best be obtained from a concrete case. A story employed very often for this purpose is one introduced by Steinthal and repeated by Adams, O'Shea, Bolton, and others. It tells that: "In a railway carriage compartment sit, in lively conversation, half a dozen persons totally unacquainted with each other. It is a matter of regret that one of the company must get out at the next station. Another remarks that he particularly likes such a meeting with totally unknown folks, and that he never either asks who or what his traveling companions may be, or tells, on such an occasion, who or what he himself is. Thereupon one of the company says if the others will not say what they are he will pledge himself to find out if only every one will answer him a quite irrelevant question. This was agreed to. Taking five leaves from his notebook, he wrote a question and handed one

to each of his companions, with the request to write the answer upon it. After they had given him back the sheets, he said, as soon as he had read an answer, and without reflection, to one, 'You are a scientist'; to another, 'You are a soldier'; to a third, 'You are a philologist'; to the fourth, 'You are a political writer'; to the fifth, 'You are a farmer.' All admitted that he was right. Then he got out and left the five behind. Each wanted to know what question the other had got, and behold one and the same question had been proposed to all. It ran: 'What being itself destroys what it has brought forth?' To this the scientist had answered, Vital force; the soldier, War; the philologist, Kronos; the writer, Revolution; the farmer, A boar."

It is very obvious that, in the case of each person, all the conditions were exactly the same, the questions, the writing, yet why were the answers so diversified? Evidently the difference lay in the individuals, in the mental glasses through which each viewed the problem. Each brought to the question as much as he expected to get out of it, each interpreted it in terms of his own life, his own previous experience. The mental process of interpretation through which each mind passed is known as apperception. The sum total of the experience which each mind brought to bear in this interpretative process is called the apperceptive stock, or the apperceptive mass.

Apperception Defined.—James defines apperception as the mental assimilation of a new presentation; but the meaning that a new presentation will suggest always depends upon what is contained in the individual's psycho-static condition; that is, in his apperceiving mass of ideas. A simple definition, more helpful because it reflects the value of apperception in teaching, is, "The mind's interpretation of the new in terms of the old." From this formal statement the conclusion is obvious that "all cognition is only recognition."

The Nature of Apperception.—It is essential that the student guard against considering apperception as a mental result rather than a mental process. Percepts and sensations

are the result of mental reactions. But apperception is a process which gives, as a result, the perception of the experiences we live through in life.

The nature of apperception is often expressed in the form of a proportion, for we are told that the mental process of apperception is to the mind as the physical processes of digestion and assimilation are to the body. We can clearly deduce, therefore, that we see by means of what we have seen, we hear by means of what we have heard, we think by means of what we have thought. He who has some knowledge can acquire more. The biblical expression, "To him that hath shall be given," finds its pedagogical illustration in apperception. We may therefore conclude with safety that no two people see the same thing in the same way, nor think of it in a similar manner, for no two individuals have the same apperceptive stock of knowledge which determines their interpretations. To the historian the head of Lincoln revives the memories of the historic setting of his activities, to the minister and moralist it is the embodiment of inspiring human virtue, to the sculptor it is an excellent model, "a good subject," the imitation of whose likeness affords a means of artistic expression. In discussing imitation the point was made that a perfect reproduction is well-nigh an impossibility. The fact is used by some as an argument to prove that imitation naturally develops originality. In the light of the present discussion of apperception we can offer the explanation that an exact counterpart is an impossibility, because the varying mental prepossessions in the mind of each imitator give, almost, a preconceived image.

The doctrine of apperception explains the use of old knowledge. Old ideas in the mind must not be regarded as a mass of dead weight which is recalled by special memory effort. Old knowledge is a living and dynamic factor, an active power which can seize, appropriate, and interpret new facts. Old facts are compared by Lazarus to "well-armed men in the inner stronghold of the mind, ready to sally forth

and overcome or make serviceable whatever shows itself at the portals of the senses."

Taking this view of old knowledge, it becomes important to select only such knowledge as is useful or socially necessary. That knowledge which is designed only to "train the mind" is not valuable enough to warrant its acquisition. We must learn such information as will become a factor in the further acquisition of new knowledge. Those facts which are not worth the learning for their own intrinsic value as facts are not worth learning at all. We may quote McMurry to support this contention: "In the selection of material for school studies, we must keep in mind knowledge, which, as Comenius says, is of solid utility. Knowledge which is thus useful is in itself a strong element of power because it is a direct means of interpreting and mastering the world. Much of the knowledge gained in schools for mere disciplinary purposes is not, in the apperceptive sense, a source of power. It may be indeed mere pedantry and pretense and even self-deception."

Apperception is regarded as a force which makes for mental economy. It is only a particular form of association of ideas. Every new idea is fused with kindred old ones; knowledge becomes so classified and systematized that a new acquisition causes the mind no perceptible increase of effort to retain it. Apperception thus makes for mental unity, for it is a process which concentrates our knowledge through integration. By associating, classifying, and unifying individual facts it thus achieves a much desired economy of mental effort.

A new idea which does not fuse readily with our mental possessions is rejected. Herbart therefore defines interest, as was noted in a previous connection, as the feeling which accompanies apperception. The justification for this conception is found in the fact that an idea which we do not readily apperceive is uninteresting. The truth of this is a common experience, for we know that the mind has a natural aversion for anything which is so new and strange

that it does not harmonize with our past selves. In youth curiosity leads us to call up the wrong apperceptive mass and thus produce a hybrid fusion. The child who sees the snow for the first time calls the flakes feathers. A lad of four who saw a music sheet, with its lines and notes, announced that this was a picture of barbed wire. In old age this tendency toward mental economy leads to a rejection of that which is markedly new. This mental phenomenon explains the old "foggy" and his quaking fear of any radical change from the beaten path of his old days.

Psychological Conditions Essential for Apperception.—

There are certain definite basic conditions in apperception whose presence must be guaranteed if we expect the new knowledge that we present to fuse readily and properly through correct interpretation. These are primarily four in number:

1. *Properly Sustained Attention.*—Unless the apperceptive stock of knowledge can be sustained we do not gain clear and steady understanding. A common class-room complaint is, "In one ear and out of the other." This is caused by shifty attention, which gives a fluctuating apperceptive mass without the necessary permanency for proper interpretation.

2. *Liberal Number of Ideas in Apperceptive Stock.*—When a child complains that the grammar lesson is too difficult despite his honest endeavor to learn it, we have a clear illustration of the fact that his past knowledge is so scanty that a union of present facts with old knowledge gives no rational result. The gradation of lessons is evidently faulty. The teacher must reorganize the development of the subject and present a simpler topic that finds in the mind a host of kindred facts and viewpoints which will serve as interpretative material.

3. *Proper Apperceptive Stock Must Be Called Up.*—A common explanation which children give for incorrect answers in examination is, "I misunderstood the question." This is simply a statement that the wrong apperceptive mass

has been aroused and fused, causing hence the inevitable incorrect interpretation. Tell an English and an American child that you have two pounds,—how varied are the conceptions in the minds of each.

4. *Proper Emotional Attitude.*—This is a very important condition for proper apperception. Not only must the proper apperceptive stock be called up but the pupils must be emotionally receptive, emotionally conditioned for the interpretative process. When one is cheerful, he hardly pays any attention to a slight noise. When the same person is vexed, this disturbance becomes a clamor and a source of great annoyance. Personality, aside from old knowledge, has a decided effect on apperception. The morbid person sees everything from the gloomy side; his buoyant brother may rejoice in the same conditions. The personal equation, the temperamental ego, rather than old facts, will often determine the most vital interpretations. Thus Hamlet complains, "There is nothing good nor bad, but thinking will make it so."

A vivid, convincing illustration of how apperception is determined by emotional attitude is found in the contrast of Walt Whitman's estimate of life with that held by Thompson. The former admits that the day is cloudy and even cheerless; but back of the gloom the sun is waiting; "What a glorious day we shall have on the morrow." The latter concedes that the day is pleasant but the clouds are gathering for to-morrow's storm. Whitman, paralyzed and helpless in his invalid's chair, speaks of the joy of merely living, of watching nature in her kaleidoscopic changes throughout the successive seasons, turning from beautiful to more beautiful. As the last hour drew near, his all-controlling optimism dispelled fear and gloom, for he remarked, "I may be at death's door but I refuse to spend my last moments in death's shadow." Thompson, strong of body, on the contrary, conceives his life spent in a "City of Dreadful Night," each hour of which is a "ceaseless, termless hell." Shall we take the roseate aspect of Whitman or the deep-dyed pessi-

mistic view of Thompson? Whichever attitude we assume, we may be confident that it will determine our interpretation of everything we read, of all we see, of everything we do, of all that life offers. Apperception in the final analysis is truly the psychic means of adjustment to environment.

Application of Apperception to Teaching

What application can be made of the apperceptive doctrine in class teaching? It serves to emphasize a number of useful practices, chief among which we must study the following.

I. Every Lesson Should Begin with a Definite Preparatory Step.—Apperception teaches clearly that no new idea can be grasped when presented by itself. The teacher must therefore call up its proper kindred associations and prepare the intellect for its reception. The beginning of each lesson must therefore be thoroughly apperceptive in its nature and strive to supply a fertile mental bed in which to plant the seed of new knowledge.

Dangers in Neglecting the Preparatory Step.—This preparatory step, the review step, is absolutely essential, for its omission leads to one or more of the errors pointed out by McMurry in his "Method of the Recitation." These dangers in neglecting a preparatory step are (a) "no understanding of the presentation or only a partial comprehension." Teach "percentage" without first reviewing decimals of two places, and the children have no idea what you mean. Present decimals as a thoroughly new and independent branch of arithmetic without showing that all whole numbers obey the same law, viz.: as we go from right to left, they increase ten-fold, from left to right they decrease ten-fold, and that therefore decimals are only a continuation of whole numbers, and the children fail to grasp the meaning and underlying principle in the decimal notation. If comprehension finally does come, it is not until the middle of the lesson is reached; then only do the children see a glimmer of light. But a

little time spent on the notation of whole numbers prepares the mind for the tenths, hundredths, and thousandths of the new work. (b) A second great danger in omitting the preparatory step is inevitable. Because the children understand, at best, only partially the initial elements in the lesson, attention is lost and listlessness supplants interest. It makes little difference whether one or both of these conditions arise, because either one militates against a successful lesson and effective teaching. The conclusion thus far is, therefore, review the necessary old knowledge before teaching the new, for, in teaching, the sequence is from the known to the related unknown.

Means of Establishing Apperceptive Basis.—The means that teachers employ for recalling the requisite old knowledge are invariably two. Some simply state a summary of the old facts and thus pave the way for the new. Whatever may be said of this means in higher teaching, it certainly has no place in the elementary school. Let the teacher state the summary and the children are at once inattentive, for they feel that they know this. The better, and perhaps the only permissible, method is to review the old by asking a few leading questions. Now the burden of thought is on their side, they must find the necessary basis for the new lesson. Giving it to them does not guarantee that it is in their minds: requiring them to give it to the teacher is a partial assurance that a working apperceptive stock has been aroused.

Preparatory Step Must End in a Statement of the "Aim."—But every preparatory step must look forward as well as backward. The review must have a definite point to attain and must move toward its specific goal; it must foreshadow the tendency of the new lesson, hence we say that every preparatory step must end in the statement of the "aim" of the period, otherwise it is futile.

Illustrations of the Value of the "Aim."—A few concrete illustrations may make clear the importance and the function of the "aim." The topic of the lesson is "Washing-

a moment or two, unless we perceive it in a new manner." In trying to establish a percept, therefore, we must keep changing the appeal that it makes to the senses. This explains why we gain the most knowledge from a picture during the first moment of the presentation. Look at any fixed object in the room. At the end of a moment or two the mind involuntarily attempts to leave it and the image becomes blurred. If the object is changing we can keep watching it much longer. The thing perceived, therefore, to continue being perceived, must change its appearance. This psychological fact has its lesson for the teacher.

Learning to perceive by "doing" would give a new element to what we present. In teaching a flower, we must let the children separate it into its component parts, and put them into the proper position again to regain the shape of the flower. It is not sufficient to have the children merely look at it if they are to obtain a good percept of it. In the workshop this principle, "Learn to know by doing," applies equally well. In the processes of creating, measuring, cutting, fitting, etc., we are constantly perceiving from different points of view, seeing the same thing from a different angle. Hence those things that we learn to know through the process of creation, by actually doing them, always mean more to us. The experienced man is always more proficient because he has actually been doing the thing that the inexperienced person has read about or has seen, but not done. Teaching by motorizing is hence a means of increasing the mind's power to perceive.

Dramatization an Elaboration of the Principle of Motorization.—Motorization, when applied to subjects like history, literature, civics, and the like, is called dramatization. When it is used within proper bounds it becomes exceedingly valuable in giving a clearer perception of meaning. The children should be required to produce in action the ideas which they gained in these subjects. This is the most effective means of discovering errors and misconceptions which the children carry away. In reading, for example, the teacher should

demand not only correct vocalization but proper bodily expression as well. The child who reads "Father Felician, with faltering step, ascended the altar" should be made to execute the movements. Then there can be no doubt that he has grasped the meaning. "And he spoke in a faltering voice, 'what is this that ye do, my children,'" should be read in the faltering, solemn voice of the priest. This insures a proper grasp of "faltering" not only by the child who is reading but also by those who listen and watch. Every primary teacher who insists on this motorization in the reading of "The Three Bears" can testify to the spirit and enthusiasm as each child is made to read in the sharp, shrill voice of the little bear, the grumble of the middle-sized bear, or the gruff voice of the big bear. A class of foreign-born children whose language is exceedingly limited cannot be made to understand the meaning of shrill, grumble, gruff without this appeal to the senses. No child can feel the story and lose itself in it unless we insist on its motorization or, the more pretentious term, dramatization.

In teaching civics, especially in the upper classes, excellent results can be obtained by motorization. A topic assigned by many courses of study is "How a Bill Becomes a Law." No amount of explanation of the origin of the bill, of its introduction, how it is referred to the committee and reported out, read three times, voted on, passed to the next house, through the labyrinth of legislative action, will make the meaning quite clear. Nor will the child really perceive the process. The best method presents the topic through motorization. Divide the class into two houses, with their respective heads, one elected, and the other appointed by the teacher. Have the bill introduced by one child and let the rest pass it through all the necessary steps. The lesson is alive; it teaches the process by appealing to action; it gives a percept that is clear, vivid, and lasting.

Motorization is an effective means of teaching, primarily because it makes its appeal to the muscular sense. The previous discussion emphasized this gate to consciousness. We

point of attack in the lesson. Thus, in the illustrations cited, we directed the mind to look for "How Washington met the problems attending the organization of a government," "How a canal helped New York and made it the leading commercial city," "Why and how the English tried to take the Hudson River." Having adjusted the mind and having placed it on the right track, the child can be expected to follow more easily the order of development of the lesson.

And, finally, we must remember that a good aim is a standard of relevancy. If in teaching the aim is kept before the class and the teacher, the lesson will not go off at a tangent at every new point. All that is irrelevant and immaterial is easily omitted; everything that reinforces the problem is welcomed and incorporated. Most errors of faulty instruction can be traced to aimless teaching. Neither teacher nor class is conscious of any one big problem that is to be solved. So definite and specific should the aim be that if at any moment a stranger stopped the class in the middle of a lesson and asked, "What are you trying to learn?" the answer should be forthcoming from every child. Knowing the goal, the pupils interpret every step in terms of the aim and often anticipate the next conclusion. This means thought, active coöperation,—results whose advantages should be sought at every opportunity.

The Emotional Preparation.—In our reading lessons, more than in any others, do we fail to see the need of a preparatory step. If our conception of a reading lesson is only one in which we make the children vocalize the printed letters and words on the page, then we need no preparation. But if we really want our children not only to understand but also to feel and appreciate what they read, then we must prepare the minds emotionally, make them emotionally receptive for what is coming. Before reading the "Children's Hour," we must picture to the child the eagerness of a father to complete his day's work so that he may meet his children, their eagerness to be with him, the joy that the children

themselves have experienced in meeting their own fathers. The children are now emotionally conditioned to appreciate the spirit of the poem. In every masterpiece we find that the author himself tries to instil in his reader the proper apperceptive feeling before he gets into the heart of the story. Note the sad and plaintive atmosphere that Longfellow gives in his prelude to *Evangeline*. "This is the forest primeval, the murmuring pines and the hemlocks," etc., etc. There can be no doubt as to the nature of the story; the mind is prepared both to give the sympathy called for and experience the sorrow and the sufferings of the characters. So, too, in music; does not the composer try, in the overture, to put the listener into the proper emotional state? We must have a proper apperceptive stock of emotions as well as of ideas, otherwise appreciation is markedly decreased, if not obliterated entirely. What the author does in the masterpiece, and the composer in music, the teacher must do for each day's reading lesson.

How Can an Emotional Preparation Be Given?—The teacher who is readily convinced of the need of an emotional preparation now asks, "How can this emotional receptivity be produced?" Three practical suggestions are offered for class-room work: (a) state the facts, then stir the child's mind to see possibilities for comedy or pathos in the situation; (b) as far as possible obviate unseemly mirth; (c) use appropriate pictures. Let us apply each of these.

Application to Specific Lessons.—(a) Suppose the reading lesson to be Longfellow's "Excelsior." Through a series of review questions elicit from the children the topography of a mountainous section like that of Switzerland and the severity of the storms and snows in such a region. This will give the necessary situation. We now ask the children, "What dangers might befall you if you started out on an errand just as such a storm was breaking out?" As the children picture themselves at the mercy of the elements they suggest, "I might lose my way," "I might be buried in the snow," "I might be frozen to death," etc. These are only a few of

a list of tragic possibilities offered by a sixth year class. After five or six good suggestions have been obtained, and while the children's imaginations are still conjuring up the terrors of the situation, the teacher announces, "Let us see what befell the boy that Longfellow tells about."

"The Wreck of the Hesperus" would receive a somewhat similar treatment. Let the children open their geographies to a picture of a rock-bound coast. As in the first illustration, place the child in the midst of the situation in order to secure active imagination. Let the teacher ask, "If you were in a sailing vessel along such a coast and were caught by a sudden storm, what dangers would threaten you?" The child's love of melodrama asserts itself as he begins to paint the terrors of such a plight. A few of the answers given by the children follow: "driven to sea and lost," "dashed against the rocks," "loss of rudder and masts," etc. The teacher then adds, "I wonder what happened to the skipper and his daughter on the Hesperus."

The reading lesson may be a larger unity, a long masterpiece, but the emotional preparation would be the same. Before beginning to read Shakespeare's "Julius Cæsar," teacher and class review the government of Rome, the rapid rise of Cæsar, etc. The children are now asked to account for the many enemies of Cæsar and they offer, "some were jealous," "some feared him," "others lost everything by his fortunes," "still others feared the downfall of the republic," etc., etc. "What would the enemies of so great a man as Cæsar naturally do?" the teacher queries. As the obvious answer, "they begin to plot against him," is obtained from the pupils, the teacher announces "Let us turn to the great plot against Cæsar as told by Shakespeare." The children begin to read with minds ready to see behind actions and statements, seeking machinations and schemes. How much more intelligent does the first act become if the children start with such an attitude!

Where the selection is humorous, the same method may be employed. In preparing for "Rip Van Winkle," a short

conversation with the class soon brought up descriptions of many queer experiences after sleep. Many children recalled occasions of having napped for an hour late in the afternoon of a winter's day and then, imagining that they had slept overnight, made strange remarks which amused the rest of the family very much. Others told of confusing what they dreamed about with real occurrences, and realizing their error only when they were laughed at. As the children were in this reminiscent mood and a smile lit up each face, the teacher introduced the reading lesson with "Now let us see what a trick sleep played on Rip Van Winkle." The pupils begin their reading in the proper spirit. When the class read in the very first paragraph about that "broad expanse of the Hudson, where the Dutch sailors prudently pulled in sail," the children realized the delicate humor and the gentle irony of the author.

A history lesson often demands the same kind of emotional preparation. It is evident that in giving a lesson on Arnold the apperceptive basis can be established with little difficulty. What is more important is that the children have the proper emotional attitude toward the man and his offense. They must experience a feeling not only of resentment and disapproval toward the traitor, but also of pity for his miserable lot. To insure this proper emotional reaction, let the children recall an act of treachery on the part of one of their playmates. By a few judicious questions and suggestions, elicit the disgust and contempt that his old friends now feel toward him, and the distrust with which his new companions regard him. They must not only realize how hard is the path of the transgressor and how dearly he pays for his folly, but they must also have some sympathy for the erring wretch. With such an emotional attitude as a basis, the teacher can introduce the topic in question, confident that the life and conduct of Arnold will be regarded with entire disapproval, yet without the bitterness which the average school history arouses.

These examples taken from literature and history illustrate

the class-room application of the suggestion which advises that the necessary facts and conditions be first given and then the series of possibilities for emotional experience be started in the mind of each child.

(b) The appreciation and the emotional appeal of many literary gems are often lost because no attempt is made to forestall an improper sentiment or a vulgar interpretation which children so often show. A little class-room experience soon enables teachers to recognize what parts of a masterpiece to omit, what incidents to pass over, or what expressions to guard against. Many a class has lost the force and the grandeur of the simple appeal for democracy in Burns' "A Man's a Man for A' That" by inexcusable mirth when the line, "The rank is but the guineas' stamp," is reached. The vulgar slang of the street rather than the poet's gospel seems to be uppermost in consciousness. How can we guard against such occurrences? A simple preparation may be of service. Ask the class, "What is meant by 'the dollar is often the stamp of rank'?" "How would an English lad say the same sentence?" The answer which children have given very readily is, "The pound (£) is often the stamp of rank." "How would he say it if he thought of the denomination higher than the pound?" A titter pervades the class, but all the humor which the word can provoke is expended and the line in question is read with the seriousness and the dignity that it merits. The experienced teacher undoubtedly realizes that this is not an isolated example but one of a host of instances which daily class-room routine offers.

(c) Through a wise choice of pictures and varied illustrative material, the most effective emotional preparations can often be given with a few words from the teacher. Before reading that part of "Evangeline" which tells how the simple Acadian folk were banished and the members of their families scattered, let the class study the picture of the terror-stricken people spending the night preceding their departure on the shore, the little fires burning, Evangeline

and Father Felician going about from group to group offering consolation and inspiring hope. The reading of the "Wreck of Hesperus" may properly begin with the little picture found in many school readers. It shows the calm after the storm, a mast floating about, with a little girl lashed to it, the little girl frozen stiff and her dishevelled hair shimmering on the water. Let the children look at the picture and then try to devise a suitable story. When the children have conceived an appropriate narrative, the reading is begun after the teacher tells the class to compare their stories with the one Longfellow tells. It is a waste of time to listen to their conception. The children were asked to compose a story as a guarantee that they were in the proper apperceptive mood.

Characteristics of a Good Aim.—As a final consideration of the "aim" in each preparatory step, we may ask, "Since the aim is so important, what essential qualities must it possess?" The necessary characteristics are three: (a) It must foreshadow the approach of experience that is practical, concrete, and necessary to the student. (b) The form of the statement must be short and simple, so that it may be kept, with great ease, as an ever-present guide throughout the entire lesson. (c) The nature of the statement must be attractive and designed to arouse the innate cravings of the child, so that there is a willingness on the part of the child to meet the difficulties attending the acquisition of the knowledge to be taught. These three essentials may gain in force if we see their worth in practical situations.

A teacher was preparing the children for a new type of problem in percentage. After the necessary review the teacher announced, "We are now to learn what per cent. one number is of another." Such an aim violates the three-fold standard that was laid down and is invariably received with absolute indifference. While this form of example may have a practical value in life, it was not stated so that the children would see it. It lacks simplicity, for what mental content can such an abstract statement arouse in a child's

mind, whose knowledge of arithmetic is both limited and vague! Then, too, what does the average lad care "what percentage one number is of another"?

Let the teachers present to a class of boys the list of baseball players, or the standing of the various teams in the leading leagues and ask "How are these batting averages figured" or "How is the standing of each contesting team determined." How instantaneous is the response, as the spark of interest is kindled and fanned into the flame of effort, in whose path all difficulties disappear! If it is the custom of the principal to read to the assembled school the percentage of attendance of each class for the preceding week, the teacher can use this as the starting point. Only as we succeed in correlating class-room lessons with life's real needs have we an absolute guarantee of a proper aim and its inestimable teaching advantages.

II. Apperception Inspires Confidence in Pupils Because New Conclusions Are Direct Outgrowths of Their Own Knowledge.—Apperception has its use and merits its position in teaching, Horne argues, because it inspires confidence in a child. It makes the child conscious of the fact that there is nothing altogether new in what is taught him, that he knew the conclusions and the reasons before, "the teacher only brought them out." It gives the child a feeling of self-reliance to find that the teacher is basing the new on the old. In teaching an adjective phrase, the teacher usually begins with a statement like "The gray-haired man is my father." The child is then asked to parse "gray-haired" and give reasons for calling it an adjective. The pupils must now change the one word to a phrase and some member of the class volunteers "The man with gray hair is my father." We elicit that "gray-haired" modifies father and that "with gray hair" functions in a similar manner. The class is then asked to suggest a name for the phrase; what other than "adjective phrase" can be given? So, too, in teaching the adjective clause, we may have the children change the sentence to read "The man, who has gray hair, is

my father," and elicit that the clause "who has gray hair," like the phrase "with gray hair," or like the word "gray-haired," functions as an adjective. The children are again told to invent an appropriate name. "Adjective Clause" can be obtained from them with little effort.

The child delights in being shown that he did it all, that if he really puts his whole mind on the task he can learn most of this subject-matter by himself. We may know better, but no harm is done in allowing the child to have this slightly exaggerated opinion of his powers. Horne adds, "They have done something for themselves and they feel it, the fount of knowing is springing up from within them and they recognize the truth, not because of the teacher's words, but as seeing for themselves."

III. Apperception Reflects Need of Studying Pupils' Knowledge Basis.—Apperception also emphasizes the fact that teachers must study very carefully the pupil's knowledge basis. In receiving a new class the vital question must always be, "What do they know?" rather than "How much do they know?" The invariable complaint that we hear from teachers receiving a new class is that the children are stupid, far behind grade and deficient in the very work that should have decided their promotion. At the end of a fortnight the same teacher very modestly admits that the class is doing rather satisfactory work and that the general average is now considerably higher. These complaints can be explained by the fact that the teacher just promoted a class at least one term's work ahead of the new group; to go back to the start, to meet the same ignorance, solve the same difficulties, and again explain away the erroneous conceptions is rather difficult. In the contrast between the class that left and the class that has come, the latter suffers much in the teacher's estimation, and the beginners must naturally appear backward and stupid. Then, too, the children are unaccustomed to the new teacher's ways and mannerisms. But the true reason for complaint is the fact that the teacher does not know the knowledge basis of the new class. In giving an illustra-

tion, in referring to incidents and examples, he does not always have recourse to the fund of knowledge possessed by the children, he does not appeal to their proper apperceptive stock. It takes a little time before he learns their knowledge status; then the apparent stupidity and backwardness decrease, for now examples and illustrations are drawn from what the children know in the other subjects, and new principles seem to be logical outgrowths of knowledge that is already in the minds of the pupils.

SUGGESTED READING

- BAGLEY. *Educative Process*, Chaps. 4 and 5.
DE GARMO. *Essentials of Methods*, Chaps. 1 and 2.
DUBOIS. *The Point of Contact in Teaching*.
HALL. *The Contents of Children's Minds*.
HORNE. *Psychological Principles of Education*, Chap. 9.
JAMES. *Talks to Teachers*, Chap. 14.
LANGE. *Apperception*.
MCMURRY. *Elements of General Method*, Chap. 6.
O'SHEA. *Education as Adjustment*, Chap. 12.
ROOPER. *A Pot of Green Feathers*.
THORNDIKE. *Principles of Teaching*, Chap. 4.

CHAPTER XVII

MEMORY: HOW DOES THE MIND RETAIN THE KNOWLEDGE IT HAS ASSIMILATED?

The initial question in the study of "Intellectual Training" was "What Is the Function of the Intellect." The answer is two-fold: first, to bring that knowledge of the outside world which is essential for the best and most harmonious adjustment of the individual, and, second, to interpret this knowledge by reading meaning and truth into it. The first function is performed by the mind's power to perceive what the sense organs bring, the second, by apperception which enables us to interpret into intelligent knowledge, the empty, meaningless sensations. Granted that the new facts have been made part of our mental possessions, the next problem which arises is "How do we obtain permanent control of them?" The answer brings us to a study of the mind's retentive power—its memory. Without this mental gift all progress of future generations would be halted, and personal education and advancement would be an unattainable desideratum. Memory is the great conservator of experience.

Definitions of Basic Terms.—An oft-quoted definition of memory is the one formulated by James, viz., "The knowledge of an event or fact, which meantime we have not been thinking, with the additional consciousness that we have thought or experienced it before." According to the prescriptions of the definition, not only must we have a present image of past experience, but we must be conscious of the fact that this is only a re-experiencing of a similar mental state. The untruthful person tells of feats and achievements which never occurred; this state of mind belongs to imagina-

tion, not to memory. We see, therefore, the reason for the reservation in the definition,—that memory occurs only when we are reliving an experience that has been ours.

When the experience is actually present before the senses, the mind's reaction gives rise to a percept, but when the experience is revived, the mental result is an image. For future use in discussing imagination, we must pause to note the differences between a percept and an image.

Percept

1. It always depends on the existence of something that can stimulate the senses. It tends to be a counterpart of reality.

2. It is usually vivid and clear.

3. It is involuntary as a rule. If the sensations from without are intense enough, the percept results without conscious direction or effort.

Image

1. It is only a revived percept. Its physical stimulation and counterpart are absent.

2. It is far less vivid and clear; it is often dim and undefined.

3. It is generally voluntary and results from the mental effort to bring back the past. Only in the reverie and in very strong association is the image involuntary.

We must not only keep percept and image apart, but we must also be careful not to consider what psychology terms an "after-percept" as a transitional state from the one to the other. An after-percept is a continued percept, due to a continued state of excitation of an afferent or in-carrying nerve. As one looks at the setting sun he has a percept of a golden ball of fire. As he turns away the percept vanishes. But after looking at the sun at high noon, one sees on looking away blotches of light, or even the outline of the sun itself before him. This is neither a percept nor an image in the sense in which these terms were defined. It is an after-percept, explained by the fact that, de-

spite the absence of the object seen, the stimulation proved to be so intense that the nerves remain in a state of excitation. The illustrations in the physical world are many. A bell struck by its hammer continues in a state of vibration for some seconds after the blow. So, too, the nervous system, still vibrating from the excitation, continues the percept.

Kinds of Memory.—In educational and psychological discussion various kinds of memory are referred to, each having its own peculiar differentia. In the main, these types of memory are differentiated on the basis of association of ideas, on the one hand, or the intensity of effort required for reproduction, on the other.

Mechanical vs. Logical Memory.—With association of ideas as the basis of memory, we may have mechanical memory as opposed to logical memory. In the former, events are connected in the mind because they are contiguous in space or in time. It is a chance organization with no other rational basis than mere accidental coincidence. To tell the beginner in reading that the following word-pictures, "father," "boy," are father and boy respectively, to tell pupils that "in the ante-bellum days the northern states were commercial while the southern ones were agricultural," or to regale them with the information that "the products of Brazil are coffee, cocoa, fine woods, tar, rubber, etc.," is to teach by appealing to mechanical memory. But when facts are grouped because of inherent likenesses or differences, or because of an underlying relationship of cause and effect, the appeal is to the logical memory. The teacher who groups words on a phonetic basis, teaching "fail," "tail," "sail," "rail," by emphasizing the phonogram "ail," thus

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>ail, the teacher who reviews conditions of climate and topography and then leads the children to infer that the northern states engaged in commercial pursuits while their southern neighbors developed agricultural interests, the

teacher who leads the children to deduce the products of Brazil in the light of the physical conditions, the resources and the industries of the country,—these are striving to place facts on a basis of logical memory, and are in that measure approaching “education” rather than “training.”

Recollection vs. Remembrance.—A second classification of memory which makes effort rather than association the basis of distinction, differentiates “recollection” from “remembrance.” Recollection is that state of recall which demands considerable effort, and is therefore entirely voluntary. Much of the memory needed in ordinary class-room recitations and in study is recollection. The student who tries to recall a name, a date, a series of facts, etc., exemplifies this type of memory—a form of recall in which facts appear to be “dragged into consciousness.”

Remembrance, on the contrary, is that state of recall in which facts follow one another easily and speedily. Without any appreciable effort, images after images come and go. This recall is almost automatic and characterizes the reverie. In remembrance there is a feeling of satisfaction in re-experiencing the old, in reliving to-day what is of yesterday, for images seem to “leap into consciousness.”

In teaching, the aim must be to change recollection to remembrance through proper association. This would tend to reduce the element of drudgery experienced in trying to retain facts grouped arbitrarily. Reproduction would then become an involuntary rather than a voluntary process. A cursory view of these kinds of memory will readily show the student that logical associations tend to develop a mastery of old facts which places them in the realm of remembrance, while a mechanical, arbitrary association gives less automatic recall and approximates recollection.

The Nature and Psychology of Memory.—I. *Memory vs. Memories.*—There are some guiding truths about memory that we must now consider, for they have had a dominating influence in changing methods and aims of teaching. The first of these principles is reflected in the question, “Is there

a memory?" We are constantly speaking of a person with a good memory, a bad memory, an enviable memory, but, in the light of psychological knowledge, it is a grave error to conceive of *a memory*. We must ever be wary of considering memory as a special faculty of the mind, a mental storehouse, the duty of which it is to retain experiences and serve them up to us at our command. Psychology tells us, in unmistakable words, there is no memory, as such. A simple explanation may bring conviction.

Psychological Explanation of Memories.—Every percept is due to a number of contributing conditions; chief among them we enumerate: (1) an excitation or a series of excitations are taken up by the eye, the ear, the tactile areas, etc.; (2) these neural stimulations are now transmitted along a set of afferent nerves to their respective areas in the cortex of the brain; (3) the sensations which follow are recognized and interpreted and the mind becomes conscious of the external object; the percept now results. Every one of these neural excitations follows its own neural route to its particular destination. But when a stimulus affects a sense organ, the result is a change of a chemical or mechanical nature. This change in tissue causes a current of excitation to travel toward the brain centers. Every stimulus that is taken up by the nervous system causes its own nerve and brain path. The central nervous system, especially the nerve centers, holds in captivity a mass of paths which are only new arrangements of molecules in the nerve tissue designed to make easier the transit of future, similar impulses. Every visual impression causes a nerve and brain path to be formed to the visual center; an auditory impression produces in like manner a neural path to the auditory center; this phenomenon is repeated for each sense function. The brain is therefore not the safety deposit vault of our facts; it is rather an accumulation of these old nerve ruts and avenues.

Recall Is a Restimulation of Brain Paths.—Since these are the processes set in motion when percepts are acquired, they must be the very ones that will be operative in recall-

ing the percept. To revive an old percept, to stir an image of old experience, we must re-stimulate in one manner or another these old brain paths. If we are trying to recall the image "orange" we revive: 1. the visual path, V^p , 2. the taste or gustatory path, G^p , 3. the tactile path, T^p , 4. the muscular path (formed when the orange was held or the hand moved over its surface), M^p , etc. The image "orange" is hence a composite of a number of specific images, the visual image V' , the gustatory image G' , etc. These separate images fuse because of the untold number of cross relations and connecting fibers in the brain, and there results a complete picture of the orange. Symbolically, the explanation becomes more graphic, for it may be represented thus: V^p plus G^p plus T^p plus M^pequals V' plus G' plus....equals Complete Image. We see, then, that the complete image is not stored away in any one center or in its entirety. We have no one memory of "orange," but a number of memories, a visual memory, a tactile memory, an auditory memory, in a word, a memory for each sense. "The Memory" is hence the economic form of the expression, "The Sum Total of the Memories."

The Memories Not of Equal Efficiency.—These separate memories are not of equal efficiency and power. Thus the eagle has his visual sense best developed, the dog the sense of smell; some savage beasts have excellent auditory powers. Man being at the head of the animal chain reflects the characteristics of one or the other of his biological ancestors. It is not surprising therefore to find that some children can remember best what they see; they have a good visual memory and are called eye-minded or visuals; others are gifted with better auditory memories and recall easily what they hear; these people are known as audiles; still others, the third class, are called motors, because they remember through execution.

This conception of memories explains two common defective forms of apperception, apraxia and aphasia. The person suffering from the former, apraxia, has lost the

memory of things. Objects presented to the senses give rise to sensations, but, since the memory for similar things is dead, the person does not recognize a chair, a watch, a pencil; he is utterly ignorant of their use. An abstract noun may receive recognition sooner than the concrete form. The latter ailment, aphasia, is more common. In this condition the patient shows a positive loss of one of his memories, usually the memory for words. A person suffering from visual aphasia sees a word but does not recognize what he read and wrote so many times in his past life; if the word is read to him by another, the idea leaps into the mind, for the auditory memory is alive. Patients suffering from auditory aphasia fail to derive any meaning from spoken language. The object itself or the printed symbol will bring recognition much sooner, for the visual memory retains its original power. If we had a memory rather than memories, such phenomena would be impossible, for we would either fail in all aspects of recall or enjoy all powers of memory simultaneously.

II. *The Increase in Retentive Power.*—A very important question for the teacher in all memory work is naturally, "Can an individual's retentive power be increased?" Tradition answers affirmatively and prescribes "memorizing very much" as the mental gymnastics that will develop this capacity. Modern psychology is almost unanimous in its very decided negative answer, for it believes that a person's native retentive power is fixed at birth. If the psychophysiological process offered as an explanation of memories is true, the negative answer follows inevitably in consistent thought. Every one of our experiences of the past was registered in the central nervous system by the neural path of excitation which announced it. Recall of old experience is rendered possible by the restimulation of these paths. Since these paths condition both retention and recall, it naturally follows that the medium, the substance, through which they pass will, in the last analysis, determine the efficiency of both retention and recollection. Some brain sub-

stances are waxlike in quality; although they are not ultra-sensitive to every new impulse, an impression once made tends to remain fixed. Other brain substances approximate a jelly-like substance; impressions come quickly and easily from the varied experiences in the routine of life, but they disappear just as readily; these brain substances are receivers but not retainers. The degree of impressionability and retention of each brain differs just as the quality of muscular fiber, the richness of the blood, and the healing power of flesh vary in every person.

These characteristics are not peculiar to brain tissue alone. All living tissue has the two-fold property of impression and retention. Any habit of action is a living proof of this phenomenon. Recent progress in the inorganic sciences shows that even inanimate matter, under certain conditions, possesses impressionability and retention. The photographer's plate and the phonographic record are illustrations of inanimate memory. The same fact is seen in the violin, for we are told, "The sounds of a violin improve in the hands of an able artist, because the fibers of the wood at last contract habits of vibration conformed to harmonic relation." Evidence can be multiplied without end to support the conclusion that "All matter, organic or inorganic, is capable of memory."

In the light of this physiological explanation of the efficiency of the memory, an increase in native retentive power is hopeless. The only method of producing a radical and telling improvement is to change the nature of the brain substance, to make the fickle jelly-like brain wax-like, or the obdurate unimpressionable brain more sensitive, so that experience will be registered more readily. Either task must still be left to the province of the Creator. It follows, therefore, that the law, "Each individual's native retentive power is fixed and constant," must be regarded as basic and irrevocable in teaching.

Health and Retention.—Since memory, which consists of registration and retention, is a physiological phenomenon and

is conditioned by the brain tissue, there must be a very intimate relation between health and ability to recall. Whatever adds to bodily vigor and energy helps promote the brain's function of retention. After sleep and rest one recalls and retains better than in the hours of fatigue and ill health. Bodily conditions not only affect the character of our judgments and reasoning, but they show more rapid and positive influences on memory. This fact has its application in the classroom. It tells the teacher that a drill period placed at halfpast eleven in the morning or at halfpast two in the afternoon is bad, for these are the periods of greatest fatigue. An arithmetic lesson of ninety minutes with a sixth year class usually wastes the second half of the long weary period, for retention decreases with the growing fatigue. Because of the same law, maximum efficiency does not obtain in study periods assigned for the last half hour of the afternoon session. Examinations should be given early in the day and should not all be crowded into one session. There seems to be an unwritten law which sets Friday apart as the day for tests. The conveniences the day offers are offset by the tedium and strain of a close succession of examinations. Written quizzes and tests should be scattered through the week so that the child can do justice to himself by answering the questions in the most favorable hours of the day.

Spurious Evidence of Increased Retentivity.—Untruthful and unscientific experiments are often quoted and spurious, well-advertised schemes are advanced, as evidence of increased retentive power. Reliable experimentation shows that an individual who memorizes a number of poems will not enjoy a greater ability in learning the last one by heart. He may discover petty tricks and devices of study which tend to reduce the effort here and there, but this result does not evidence increased memory power. James, Pillsbury and Bolton, among others, quote their own experiments, which show that continued practice in daily memory drills brought retentive power that was usually lessened for general purposes. Individuals have not only fixed retentive ability, but

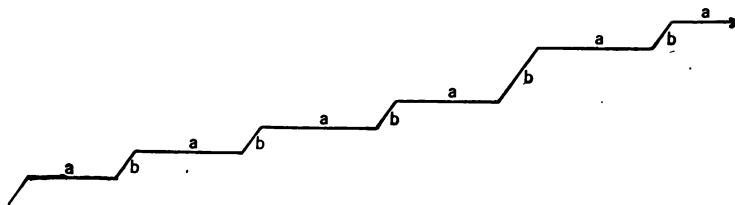
when gifted in memory power show especial capability for one specific kind of association. Some people remember prose readily, but not poetry, others with a sense of rhythm and cadence show the contrary; still others can carry in memory names, or figures, or faces, or colors, or forms, etc., showing their retentiveness for some one rather than for all of these. Actors of repute report that every new part requires as much study as they bestowed on their lines early in their careers. Where less time is consumed they always attribute the fact to an improved method of study, a systematic grouping of ideas, the memorization of ideas before words, etc. This must be regarded as a better method of thinking, a better and wiser use of native retentive power, rather than an increase of it.

The story is told that Thurlow Weed, the famous New York political leader, had a poor memory. To acquire better control of the day's experiences, he decided to review the daily details to his wife, every evening. After a few weeks of this practice he found that he could recall his daily affairs more readily and that he had less recourse to his note books and memoranda. This is a typical example of the host of illustrations offered to prove that retentiveness can be increased. The case in consideration proves that with a different mode of utilizing one's memory power one may use it to greater advantage. Heretofore, what happened merely happened. But under the new system each occurrence brought with it the conscious thought, "I must remember this, it must be told at home." Each experience was especially emphasized and subjected to special thought and association. A great variety of new modes of mental life can readily be devised which will give a better hold on the details of daily experience. These will be explained in a later connection.

The physical world offers many analogies showing increased efficiency due to a wiser use of native power. A blacksmith may have as much lifting strength as a piano mover, but the latter can lift better than the former because he uses what strength he has more efficiently. An inex-

perienced worker is shown how to hold his tools. He now turns out more and better work, due not to increased energy but to a wise use of the energy that is his.

The Drill Important.—The practical teacher must be careful in applying this view of memory in teaching. To assign long lists for memorization, to teach geography by a memorization of the text in the book, to demand that children commit to memory chronological tables in history because all these develop the child's memory, are practices which are evidently in flagrant violation of psychological truth. But there is danger of too strong a reaction with the modern conception of the problem. With the acceptance of the conclusion that memory power cannot be increased, it does not follow that memory work is to be neglected or the drill frowned upon. We must remember that, aside from the broad aims of education, we must give the children a knowledge of the basic facts in the essential subjects. No matter how skillful the explanation and how thorough the comprehension of the facts, they will be crowded into the dark nooks and crannies of the mind, unless they are reënforced by memory appeals. If the drill is the only means of giving permanence to knowledge, then the drill must be emphasized.



The observing teacher may have found that progress in learning is never continuous. Each child seems to show "a no-learning period" followed by a "rapid-learning period," an alternation of stationary and progressive stages. Of the two periods, the former seems to occupy a much larger part of the educational period. The curve of learning may be represented graphically as is shown in the figure above, "a" representing the "no-learning periods" and "b" the "progressive periods."

A superficial aspect of the learning curve may seem to show an organization that hinders the most rapid progress. Closer study shows us that the contrary is true. The plateaus (b) mark the stages in acquisition of knowledge when facts learned sink deep and are made to function as habit. Without these "no-learning periods," progress would be extremely illusive and transitory; with them, it is gradual and permanent. The conclusion for well-graded work with ample opportunity for drill is too apparent to the teacher to need more than mere passing mention:

III. *The Persistency of Memory.*—The layman usually underestimates the permanence of mental acquisitions because of repeated embarrassment at failures to recall past experiences at the critical moment. The memory of any experience is always coexistent with life itself. Every idea comprehended, every emotion felt, every situation lived through, makes its indelible impress upon the whole nervous system and changes the individual in direct proportion to its influence. While it is true that one has not that control of old mental possessions which enables him to recall any element at will, it is nevertheless equally true that, in point of time, the dynamic results of all past experience are parallel with life itself. Psychology has gathered overwhelming evidence of the lifelong persistency of memory. People who have forgotten their native tongue, spoken in youth, often express the ravings of a fevered brain in the language of their earlier years. Clergymen have repeatedly testified that Americanized foreigners, praying before the end, have often relapsed into their old language with a fluency and accuracy which they could not attain in their calmer days. People saved from drowning or from imminent death invariably tell of a panorama of past events that flitted through their minds; scenes of early youth, visions of parents not seen since early youth, and the like, give proof of the belief that memory is coexistent with life. We may not be able to recall an event in the even tenor of life's routine. Its impression on the nervous system is a permanent record, which

very often can be disclosed only by a stimulus of the proper vigor and intensity. Our knowledge of instinct, of racial characteristics, of hereditary influences suggests the idea that memory is racial and may persist even longer than the life of the individual.

How Can Native Retentive Power Be Used to Greatest Advantage?—Although native retentive power is fixed at birth, it is evident that few people utilize their memory gift to the fullest extent. The problem that now arises for the teacher is "What can be done in the course of instruction and study to enable each child to avail himself of the maximum capacity of his native memory power?" A few constructive suggestions for methods of teaching can be offered. Since recall is due primarily to the restimulation of old brain paths, the aids and devices offered seek to affect these nerve ruts and make them permanent. Effective recall is determined by the conditions that we now set forth.

I. *Attention and Concentration.*—The simple formula which holds true in all teaching is, "The greater the attention to the work at hand, the deeper is the impression made upon the mind." Those facts acquired while the mind is engaged exclusively upon only one topic will cling with greater tenacity. We forget a number of important topics and essential elements in the course of our daily experience, yet how well we remember the questions, our answers, and even the petty incidents of an important examination! "Each mind becomes especially retentive in the direction in which its interests lie." Thus, the athlete, who forgets the facts of his studies, remembers accurately all the athletic records of years, the canvasser remembers places and faces, but forgets important occurrences; Mozart wrote the *Miserere* of the Sistine Chapel from memory after hearing it twice. This "especially strong retentive power in the line of interests" results not from an increased memory power but from the fact that so much added concentration and attention are given these particular experiences that the impression is greatly intensified and is hence rendered lasting.

II. *Vividness in Presentation.*—It is our common experience that the habitual and the monotonous are not remembered. The situation that is novel makes its impress because the mere newness gives it an element of vividness. “What did I have for this morning’s breakfast?” may be a difficult question to answer. To name the minute incidents of a disaster witnessed years ago seems a more reasonable question; the vividness of the experience made the impression indelible and the recall of the event is almost automatic. First impressions are most lasting because they are the most vivid. To teach a physics lesson by starting with the experiment rather than with the explanation of the phenomenon, to present a topic in history through a proper dramatization, to lead the children to acquire the meaning of new words through motorizing them, to teach that 231 cubic inches = 1 gallon by having children construct a box of 7 x 11 x 3 inches,—are all means which not only add interest to the presentation but also increase the retention of these facts by the vividness with which they enter consciousness and impress themselves upon the mind. Since one interprets all new knowledge in any subject in terms of past acquisitions, it follows that the teacher must exercise great care in giving the proper initial impressions in each branch of knowledge. The vividness of the impression is hence another determining element in effective retention, for it, too, deepens the brain path that must be re-stimulated.

III. *Frequency, Recency, and Regularity of Repetition.*—The physiological conception of registration and retention makes apparent the need of repetition as a process of deepening nerve paths. But mere repetition will not suffice unless there are frequency and regularity in the duplications, for the impressions originally made become dim and lose in force and in readiness to respond to an impulse of recall. Experimentors find that it is usually the closeness of the succession and not the number of successions that is the most important factor in making a well-worn brain rut. It follows therefore that greater retentiveness can be developed by a

daily program of short periods in which topics can be repeated frequently than by one in which the time given to each lesson is protracted. The elementary school teacher, who must give one hundred and twenty minutes each week to geography, will reap better results from four "thirty-minute periods" than from three "forty-minute periods." Although the sum totals are the same, all conditions being equal, the impressions in the former are more lasting than in the latter.

IV. *The Multiple Sense Appeal in the Lesson.*—The general educational justification for this principle was seen in the consideration of the problem of sense training. To connect this topic with memory it is only necessary to emphasize the fact that the greater the number of senses appealed to the greater is the number of brain paths formed; hence the greater the possibility to re-stimulate one or more of this greater number of paths. This suggestion finds its illustration in the teaching of spelling. The teacher is advised not only to syllabicate and define the word but also to pronounce it to the class, to write it in large bold letters on the board, to spell it to the children as it is being written. The children have thus far a visual, an auditory, and a muscular impression of it; they are then asked to repeat it a number of times, individually or in concert, and then to write it in the air or on paper. This is followed by a visualization of the word. Every possible sense appeal has thus been made. Some will remember the word because they are eye-minded, others because they are ear-minded, still others because they are motor-minded. It is plain therefore that the fusion of many sense impressions will give not only a clear percept but one that is more lasting and easier to recall.

V. *The Proper Organization of Knowledge.*—How shall we group our facts? This is the determining question when we seek maximum retention. In general, the law seems to be, the greater the thought appeal, the more rational the connection, the more easily can the mind retain and recall what we entrust to it. Let us apply this tendency concretely.

In a previous connection we distinguished between mechanical and logical memory. Their true difference is one of association. The student reads of various kinds of association, association by similarity, contrast, contiguity, cause and effect. But in the final analysis there can be only one kind of association. We must distinguish "association" from "suggestion," and "kind of grouping." James, Lloyd Morgan and other psychologists have repeatedly insisted on the distinction. Co-existing, sequential experience is the only kind of association that the mind recognizes. Association has specific reference to the mode in which ideas impress themselves upon the mind; it deals therefore with the problem of mental registration. Suggestion, on the other hand, concerns itself with the mode in which ideas group themselves and follow one another; it refers therefore to mental recall. In systematizing knowledge that is to be taught, the teacher must seek a grouping of ideas that will have a maximum rational or causal basis.

Relative Retentive Value of Mechanical vs. Logical Organization.—Knowledge may be classed under two heads. The simplest grouping is the mechanical, which merely follows the accidental sequence in which experience occurs. Because events happen in time and space, they are so taught. The Rhine River flows north and the Rhone River south; in words like deceive, believe, "c" takes "ei," and "l" takes "ie;" these are examples of such mechanical grouping. But having no rational basis such facts are readily forgotten. In an attempt to aid the mind by relieving it of some of the drudgery of mechanical grouping, teachers invent ingenious mnemonics, "Rhine" recalls "i" of "high," to the north, Rhone brings "o" of "low," to the south; "ei" follows "c" because "e" is nearer to "c" than "i," and "ie" follows "l" by the same law of proximity. Ofttimes these artificial attempts to introduce a semblance of reason require more effort for mastery than the original facts. Such grouping is frequently known as "association by contiguity" and prompts mechanical memory.

But knowledge organized on a basis of kindred causes, similarity of form, cause and effect relation leads to rational memory and is more lasting. We must remember that whenever we reason a fact *out*, we also reason it *in*. How easily do we forget what we cram for an examination! Nothing is thought out, no reason is sought at any step; the attempt is made to hold to a fact arbitrarily as long as is necessary. The examination usually marks the end of such an impression. Actual experiments with children give us conclusive proof of the greater permanency of the rational memory.

A class of children was put to studying a list of nonsense syllables and also a stanza of a simple and interesting poem containing at least as many syllables. The results are indicated in the following tables:

	No. of Chr.	No. of Repetitions Required					
		1° day	2° day	3° day	4° day	5° day	6° day
Nonsense Syllables . . .	24	26.50	16	9.50	5	3	2
Stanza, "The Blue and the Gray"	24	9.75	5.50	3	.50	0	0

Application to Teaching of Memory Gems.—In teaching a memory selection, the children were directed to learn the first stanza, line by line, and then the second, sentence by sentence. It was invariably found that when the latter process was used the time was curtailed by 30 to 40 per cent. The reason is obvious. The thought element in the organization of facts places the exercise in the realm of rational memory.

Children who enter school without knowing the alphabet usually remember such words as father, boy, toy, etc., much more easily than single isolated letters like y, f, t, o. In the one case the symbol is connected with a known idea, in the

other both are equally unknown. Hence early reading should begin with words and sentences rather than letters.

This principle of organization can be applied with gratifying success in the teaching of memory selections. The average lesson on a "Memory Gem" emphasizes the "memory" element to the exclusion of the "gem." Because of the prevailing method, "gem" seems a misnomer to the children. After the selection is explained in a general way, the successive lines are subjected to a drill, which consists of repetition, oral and written, until the children can recite the assignment from memory, with the required ease and rapidity. Whether this end is achieved by a repetition of line by line, or sentence by sentence, makes but little difference as far as the child's attitude or appreciation is concerned. One is as deadening and as uninspirational as the other. The method must be changed from a memory to a thought appeal so that the literary gem becomes a source of keen appreciation, a symbol fraught with ideas and suggestions. The proper presentation of such a lesson must be an illustration of the psychological maxim, "The art of remembering is the art of thinking." A good memory is selective and discriminative; its chief concern is thoughtful organization around rational centers.

To make concrete these generalizations governing the "Memory Gem," let us outline a lesson on "Abou Ben Adhem" as it should be given to a fifth or sixth year grade.

ABOU BEN ADHEM

Abou Ben Adhem (may his tribe increase!)
Awoke one night from a deep dream of peace,
And saw within the moonlight in his room,
Making it rich, like a lily in bloom,
An angel, writing in a book of gold:
Exceeding peace had made Ben Adhem bold,
And to the presence in the room he said,
"What writest thou?" The vision raised its head,
And, with a look made of all sweet accord,
Answered, "The names of those who love the Lord."

"And is mine one?" "Nay, not so,"
 Replied the angel. Abou spoke more low,
 But cheerily still; and said, "I pray thee, then,
 Write me as one that loves his fellowmen."
 The angel wrote and vanished. The next night
 It came again, with great awakening light,
 And showed the names whom love of God has blessed,
 And, lo! Ben Adhem's name led all the rest.

—HUNT.

The selection should first be used for an intensive reading lesson whose aim is the mastery of technical difficulties, thorough comprehension and appreciation. Because of the force of the appeal, the beauty of the picture, the sincerity of its message, the teacher can readily arouse in the children the desire to memorize the poem for recitation and dramatization. The first step in the memorization consists in asking the children to select the successive ideas and to learn them in their rational development. The child evolves, "Abou wakes from a peaceful sleep and sees an angel. The angel writes in a book; he lights up the room. Abou is brave and asks.....etc." This is accomplished very readily and gives the child a framework of thought for the wording. The child reciting his memorized selection usually thinks of the "next word," "the next line," and therefore gives a mechanical, verbal rendition. The first step insures rational recall for the child thinks of the "next idea." Even if the words should fail the pupil, the proper idea is foremost in his mind and he can more readily suit the word to the thought.

The next progressive step in the lesson requires that the teacher subject each idea to a question which the child answers in the words of the poem. The following is an actual reproduction of this part of the lesson:

Tr. "How does the poem open?"

Child. "With a blessing on Abou."

Tr. "Prove your answer correct."

Child. "Abou Ben Adhem (may his tribe increase!)."

Tr. "What was Abou doing?" "Prove your answer."

Child. "Awoke one night from a deep dream of peace."

Tr. "What did he see?" "How do you know?"

Child. "And saw an angel writing in a book of gold."

Tr. "What did the angel do to the room?"

Child. "Made it rich like a lily in bloom."

The succeeding questions ask, "How would you have felt under the circumstances?" "How did Abou feel?" "How do you know this?" "What question does he address to the angel?" etc.

Having made each important constituent idea the topic of a question and the means of reproducing the language of the author, the class is now asked a series of questions, each of which requires a rapid review of the entire selection for a thought purpose. As types of these questions we may suggest:

"What line gives the prettiest picture?"

"What line is most like poetry? Most like prose?"

"What line tells most of Abou?"

"What line gives the lesson of the poem?"

"What line suggests the ending of the poem?"

"What line is easiest to memorize?"

"What line is hardest to learn?"

In all these questions the children are sent on no fool's errand; the teacher can justify the procedure when these queries are answered by asking, "Who will volunteer to recite the poem by heart?" In the average class fifty to sixty per cent. of the pupils should be ready with a fluent, thoughtful rendition despite the entire absence of the old-fashioned drill of conning the assignment over and over. Every idea has been thought out; every idea has therefore been thought in. The poem is held firmly in consciousness by rational not mechanical hooks;—these are the mental hooks of steel.

SUGGESTED READING

ANGELL. *Psychology*, Chap. 9.

BOLTON. *Principles of Education*, Chaps. 13 and 14.

HOENE. *Psychological Principles of Education*, Chap. 10.

JAMES. *Psychology (Briefer Course)*, Chaps. 16 and 18.

KAY. *The Memory: How to Improve It*.

RIBOT. *Diseases of the Memory*.

SULLY. *The Teacher's Handbook of Psychology*, Chaps. 9 and 10.

CHAPTER XVIII

IMAGINATION: HOW DOES THE MIND PICTURE WHAT IT RETAINS?

Nature of Imagination.—The layman conceives imagination as a vivid and fantastic mental activity that paints day dreams and builds Utopias. To him, imagination never descends to the commonplace of life's daily routine. The psycho-physiological explanation of memory foreshadows a less whimsical and chimerical conception.

In a previous connection we discussed the advantages of teaching the land forms through the senses, by actual creation. If the children are later asked to call up the picture of an isthmus, they re-stimulate their old impressions, and after some few moments they have before them an image which is an exact counterpart of the small clay model they molded. The old image was reproduced because their memory power retained the old sense impression and the nerve paths that were registered in the brain. The picture in the mind's eye is the creation of the imagination.

The teacher may add:—"Suppose the isthmus were so large, that, instead of spanning it with your two fingers, it took you five days to walk it at the rate of twenty miles a day; a trolley car would have to run at least ten hours at ten miles an hour to cross it; it is so wide that eight Manhattan Islands could be stretched across it;" If the teacher continued recalling old elements in the varied experience of the pupil and added them to this reproduced memory image, she would finally arouse in the child's mind a richer picture of an isthmus, which would be named "Suez." This elaborated, reshaped image is also a product of the child's *imagination*, but evidently it is imagination of a higher form.

Definition.—Imagination has been defined in various and ingenious ways, but they all aim to emphasize the same basic idea. We can submit the following as model definitions: “Consciousness of objects not before the senses” (Angell); “The process of image making” (Dexter and Garlick); The mind’s process of picturing experiences or combining them into new forms.

Forms of Imagination.—From the illustrations which were cited in explanation of imagination it is obvious that the mind’s image-making power can express itself in two forms or degrees.

Reproductive Imagination is the first of these and occurs when the mind simply images any fact or event as it was perceived. This is an exact reproduction of past experience and characterizes the states of mind in remembering. The image is thus an exact replica of the original experience. It is evident, therefore, that, without imagination, there can be no memory, for, strictly speaking, the memory is the retentive power, whereas, the imagination is the image-producing power; the one supplies the materials, the other paints the picture.

Reproductive Imagination is opposed to Productive or Creative Imagination. In this form the individual’s mind is more than a mere duplicating machine. It takes as many old elements and ideas as are necessary or available, and weaves them into a new combination, an original mosaic of thought. It is productive imagination that differentiates the truly imaginative genius from the mediocre man, the painter from the photographer, the inventor and initiator from the blind plodder, the reformer, the active leader in society, from the stupidly contented average man, or from the mere fault-finder who has not enough creative mind to offer constructive criticism. It is reproductive imagination that preserves our inheritance, it is productive imagination that makes each succeeding heritage richer and loftier.

Imagination and the New.—Nevertheless we must not suppose that there can be anything entirely new in creative imag-

ination. Just as in the physical world we can create nothing essentially new, so, too, are we limited in the psychic sphere. In the highest kind of productive work, in the most radical innovation, there is fundamentally nothing new. Every constituent element of the final product is old, but the grouping, the resulting combination, is new and unprecedented. All invention is therefore only new form of old matter. This conception does not in the least limit the scope of originality. The possibilities for new and varied forms, the permutations and combinations of old experience are infinite.

In the last analysis all imagination must have a perceptual basis of real data supplied by the senses. An absolutely new thing cannot be imaged. A person blind from early youth cannot see color in his mind's eye, nor can the congenitally deaf have any true notion of sound. These unfortunates must necessarily know fewer phases of the world than their normal brothers, for the visual and auditory sides of life are forever denied them. The sadness of the life of perpetual silence and night that Helen Keller lives is brought home all the more strongly because of the almost ecstatic joy which she feels even in her limited imagery.

Psychological Processes in Creative Imagination.—

The complete dependence of imagination upon actual experience is seen in the successive steps through which the mind passes in its image-producing activity. In all creative imagination there are three main processes that make the final image possible. The first is a process of recall of old events and kindred experiences necessary for the formation of the new picture. This is followed by a dissociate activity in which the mind selects out of the old knowledge particular facts, events, and details which will become the elements of the final image. Through association, a combination of the isolated details, the mind completes the picture it is trying to create.

This analysis finds its application in the class room. The teacher reads the story of "Bluebeard" to a class of first-year children. Before they can have a picture of Bluebeard

the children must be reminded of the giant they saw at the circus, of the pictures of the old castles on fortified hills seen in readers of folklore and mythology, and finally of the long-bearded Norse pirates who are shown in the beginning of the books on American history. They then select such details as are necessary—the height of the giant, a strong castle on a hill, the terrible eyes of the Norse pirates—and neglect such material as seems needless. The chosen details are then combined into some form approximating the desired picture, and the required fantastic or imagined effect is obtained. The artist striving to “compose” an imaginary landscape, the writer trying to construct an imaginary story or scene, must go through these three steps of recall, dissociation of required elements, association of selected details into the required combination, just as the child does. In trying to lead a child to imagine a circumstance in history, a place in geography, a situation in literature, we must aid the pupil by suggesting what to call up, what elements to seize upon, and which to subordinate in order to obtain a rich mental picture.

Relation of Imagination to Thought and Emotion.—Imagination has been neglected in teaching because it was regarded as a mental activity opposed in spirit and nature to reason. Fact and fancy have been confused; in our mental haste fancy was made the culprit and hence was not dignified in education. Although we must admit the error of such a judgment we need not necessarily champion the other extreme and maintain, as others do when they tell us, “Because fact comes from clear perception, and perception is the basis of reason and imagination, these two forms of mental activity—imagination and reason—are only two degrees of the one activity, for, when I combine percepts into a new whole, I have imagination; if, however, I organize them on a cause-and-effect basis, I have reason.”

But one must ever be mindful of the fact that if our percepts are inaccurate the results achieved by creative imagination need not necessarily be less efficient, but, under the same conditions, the results of reason are rendered invalid. Imag-

ination, so often fanciful, is not subject to proof and need not measure up to anything in the objective world. But the very opposite prevails in reason.

The intimate relation between reason and imagination cannot be denied, for we cannot reason very deeply or to any great extent without imagination. Correct answers to questions of the type, "How will this appear if seen apart from present conditions and in different relations?" are responsible for unlimited progress in every field of human endeavor. Guessing involves making certain temporary combinations of data and is at the basis of a scientific imagination. Invention and discovery, the leaders of progress, are the direct result of imagination coupled with reason. Every attempt to harness nature, to reduce disease, to promote human safety and efficiency, would have been frustrated without imagination, for, in the final analysis, it has made possible Copernicus, Galileo, Columbus, Davy and Newton, Darwin, Morse and Marconi, Pasteur and Flexner, the vanguard of civilization. Nevertheless, our conclusion must be tempered; although imagination makes possible the highest levels and most productive results of reason, it must not be given free rein. Without due guarding, imagination may turn fact into fancy.

Imagination is more closely associated with the emotional than the intellectual activity of the mind. Both the loftiest and the most vulgar forms of the emotions bring highly imaginative states. The best æsthetic and artistic imaginative creations have much of the inspirational elements in them. The poet and the artist are imaginative and emotional, rather than imaginative and intellectual. But just as the noblest forms of emotions are imaginative, so, too, its undesirable forms make heavy drafts on the imagination. Fear, dread, hate, superstition, are emotional states that likewise show that imagination rather than reason plays the all-important rôle.

We must not, however, fail to give imagination its just due. It is that expression of our self-activity which lifts

us above the commonplace and the sordid into a world purer and finer. Not only is it the "inspirer of poetry and the handmaid-of-art," but, without it, literature would be but a "cold, insipid photograph of reality"; moral and religious consciousness would be dead indeed. It determines not only appreciation of the gems of literature and art, and comprehension of the message of music and of the drama, but also expression of the finer sensibilities and the ethical impulses. Who can feel pity and give sympathy unless he can picture himself in his brother's condition? The more faithfully we reproduce his lot the more keenly we feel his sorrow. Imagination helps each individual to divert his thoughts from himself, it transports him into realms whose paths have not been trodden, whose roads lead to others, not himself. It is another of the mind's activities whose expression tends toward greater socialization.

How Can Education Aid the Imagination?—Before considering the methods of developing the child's imagination, the teacher must realize that imagination of a higher order is a natural gift. The individual who has been denied this mental asset finds that the school can do little to make up for nature's excessive economy. All that education can do in the training of the imagination is to so exercise it that the individual will achieve the highest development of the gift bestowed upon him. In the course of experience the teacher finds that imagination is the mind's activity that is least capable of direct training. The peculiar characteristics of imagination are the justifications for such a conclusion. Imagination is free and unbridled; it transcends reality, it functions regardless of possibilities to such a degree that psychologists cannot formulate a definite set of regulations for its education. It is a law unto itself, whose behavior and results can never be foretold. Since it is so intense and individual in its activity, so intimately associated with every phase of intellectual and emotional life, it defies logical analysis and manifests no apparent systematic development. "Its birthplace is in what is most intimate to the soul itself;

it is the reflex of hope, love, reverence, and admiration. Thus it cannot be pried into from without, nor can it be greatly stimulated from without excepting by awakening the feelings. A child's imagination is often so deeply personal that it cannot be treated with too great reserve; too close scrutiny or guidance is violation of the child's personality."

From the very nature of imagination one concludes, *a priori*, that only general principles can be suggested for its proper guidance. From a mere outline of its characteristics it becomes apparent also that the problem which the teacher must solve in educating the imagination is not to devise means for its stimulation but rather to give proper direction to a process already ultra-active, so that it may become most fruitful in its imagery, a most efficient agent in life.

Principles Governing Imagination

I. Supply the Proper Material for Imagination.—The study of the psychological basis of imagination emphasized the fact that all imagination must have a perceptual basis. So true is this principle that the neural processes functioning in perception and in image-making are almost identical. Hence only as a proper perceptual foundation is laid, as sense training is given, as the world of reality is made the subject-matter of the class room, are we laying the basis for active, reliable, productive imagination. Every building process must have material with which to build; the structure it creates cannot be a bit better than the material used in the construction. The inference for education is obvious; the curriculum must provide the proper "building material" for imagination. A cursory review of the possibilities and the limitations of the average elementary school course may prove helpful.

Picture Side of History Neglected.—History transports the child into the past and allows him to relive the dramatic life of the race. In the kaleidoscope of time the child sees

past ages, mankind's life in all stages in its metamorphosis from savagery to civilization. He is gripped by the tragedies of the race, racked by its woes, jubilant at its success, inspired by its courage and patriotic devotion. History, with its varied panorama and gamut of human emotions, becomes a means par excellence of giving effective training in creative imagination.

But history taught as a mere record of events in racial development, as a fabric of dates, names, places, persons, as a transcript of the chronological details in the social bible is little more than a means of stultifying imagination and stupefying mind. The child studying colonial history must "see" the colony, the people, the dress, the houses, the occupations and handicrafts, the highways, the archaic means of transportation and communication, the entire lack of modern conveniences and scientific applications—in a word, every phase of social life must pass in review before the mind's eye. The child learning the "Stamp Act" must know more than the kind of tax it levied, when it was passed, by whom and when it was repealed. He must "see" the ship bringing the stamps, trying to land it at the Battery of New York Harbor, the resentment of the mob of outraged Americans, the march to the Governor's house to demand the stamps, the effigies that were burned, the monster protest parade and meeting. These human sidelights of the "Stamp Act" make it a live issue. They give the measure, puerile and insignificant in itself, a dynamic force which made it an important contributing factor in the strained relations between the colonies and the mother country. There is hardly a topic in a well-organized course in history which does not give untold opportunities for image-making. In the pressure of class-room routine and crowded curricula these are neglected and progress is measured by the glib recital of cold, isolated facts, by the study of the social corpse rather than the social spirit.

Picture Side of Geography Too Often Subordinated.—
Geography also offers picturing material for the imagination,

but too often it is regarded only in the light of a memory subject. Four or five cities of a country are taught, but what do they symbolize as the child recalls them in the recitation and locates them on the map? Nothing more than so many dots. "Pekin is a black, starry dot in the western part of China; Hankau is a dot on the Yangste-kiang River." These names are not cues which bring before the mind the panorama of narrow streets, quaint shops, queer and variegated colors, odd-appearing inhabitants, real life and living conditions. Give these human details, make Canton a symbol of life rather than a dot on a map, and the imagination is stirred to create a picture. In teaching the cities of a new country the teacher should select a typical one and give as complete a description of it as she can, either pictorially or verbally. Since most cities in a country bear a striking resemblance to one another in their essentials, the child who recites the cities of Holland will, if he has been properly taught, see behind each name the people, the dress, the streets, the houses; the recital of the cities of Italy brings with each the sunny sky, the many-colored dresses of the inhabitants, their life, their cathedrals, their art.

The child learns that the United States is 3,000 miles from east to west, and 1,500 miles from north to south. These figures are mere words, and are repeated as empty sounds. Make them stand for something. Let the child compute how long it would take him to walk the distance at twenty miles per day, how long a train, running a mile a minute, would take to traverse it. This kind of interpretation makes these numbers living knowledge and sets the mind at work "picturing."

Imaginary trips are ever popular forms of drill and review in geography. The child loads a ship at Liverpool and takes it to Hongkong, via the Mediterranean Sea, Suez Canal, Red Sea, and Indian Ocean, stopping at various ports to exchange cargoes. The teacher requires the child to tell what countries, cities, islands are seen to starboard and port, at what cities the boat will stop, what changes in cargo will

be made. The child is never asked to tell "what do you see if you leave the ship while it is loading? what changes in clothing must you make? what new language do you hear? how do the people differ? what mannerisms and customs attract your attention? how does the city differ in appearance? how well are the longshoremen paid who work on the dock? what kind of homes do they live in? what kind of schools do their children attend?" All these vitally human conditions are sacrificed in the worship of facts, and geography is accorded its traditional place in the school curriculum, "the memory subject."

Literature and Imagination.—Literature, as a means of supplying the imagination with material for creative work, is without equal chiefly because it is itself the product of the imagination of the race. In the discussion of the culture-epoch theory it was shown that there is an imaginary and fanciful period in the race which corresponds to a similar one in the child. The age of mythology, of fable, of bard and minstrels, marks an epoch in the social development akin to the early years of dreams and far-off fancies of the child. Since the two epochs correspond, we can readily understand the child's love for the fairy tales in which it finds a reproduction of its own mind. It is obvious, therefore, that literature offers the teacher the means of most potent appeal to the child's imagination.

Added Opportunities for Rich Imagery.—Drawing, with its exercises in design, constructions, memory sketches, and the like, stands high among the means provided by the curriculum for guiding imagination. A part of the drawing course which is too often neglected but which can contribute materially to this end is a study of a graded series of the simpler masterpieces of the foremost artists. The need of incorporating "Picture Study" into the work in drawing and making it as essential a part of the week's lessons as the principles of perspective, radiation, rhythm, or conventionalization we noted in a previous connection. Nature study which pictures the life of the common plant and animal

forms is equally important for supplying material for imagery. Music which requires the reproduction of tones and the auditory re-imagining of melodies heard or sung in the past has a similar value. The average course of study pursued by a progressive community abounds with opportunity and material for the education of imagination. Where the results are far out of proportion to the possibilities, the fault can usually be traced to errors in the technique of teaching.

II. Do Not Give the Imagination Undue Aid.—Unnecessary stimulation and aid proffered to imagination is the cause of more detrimental and perverted results, and is responsible for more arrested development by far than can be traced to an entire lack of conscious endeavor on the part of education to raise imagination to higher levels of efficiency. The best illustrations of violations of this cardinal principle may be found in many of the class-room dramatizations of history and literature. Without stopping to inquire, "Why dramatize?" "What is the object of dramatization?" "What topics and incidents need dramatization?" teachers often obey the mandate of their superiors, "Dramatize." Some of the results may be cited as cautions.

Wrong Forms of Dramatization.—In teaching the "Battle of Bunker Hill" a teacher divided her class into two armies and appointed the generals; after hints and consultation the battle began. The two armies approached and touched hands, then the British army stepped back. After a moment or two the enemy approached once more, hands were again touched and the army was again repulsed. A third onslaught was made in the same gentle fashion, but now the American army retreated to their seats and the Battle of Bunker Hill was lost. Such was the lesson, dramatized as well as it can be. What more can we expect? Surely no real force, no semblance of violence! What does a battle mean to a child? Does it simply call up the tame picture of hand-touching? In the mind's eye the child sees the canons vomiting forth their fiery missiles, explosions, deaths, indescribable horror, the British retreating only after the

hill runs rivers of blood. Again the onslaught, again the same retreat; and finally the fruitless stand against the Red Coats and Warren falls. This is the Battle of Bunker Hill as the imagination paints it. To show two groups meekly touching hands in friendly combat stultifies the imagination by restraining it in a circumstance that affords the best opportunity for its expression. Such a stupendous discrepancy between the mind's capabilities and the class-room demonstration takes the child from the sublime to the pedagogically ridiculous. "How can we dramatize the battle?" the teacher asks in despair. Since no method that we may suggest can approach the result that the imagination can achieve, the topic should not be dramatized.

Another favorite historical dramatization is the story of "Columbus before the Court of Spain." Two pupils take the part of the sovereigns, one of Columbus, another of the chief minister; a group of children stand about impersonating the courtiers. Columbus then asks for aid, gives his reasons, and then Isabella tells him that her jewels are at his disposal. Here, too, we have a presentation which offends the imagination. Let the teacher merely show the child a reproduction of the well-known painting of the scene, or only vividly describe it, and the artist within the mind of each child at once finds inspiration for a most elaborate composition. The mental painter creates a magnificent court, spacious and extravagant in detail, with decorations befitting royalty. He sees the two monarchs, real monarchs, on their throne of gold, the auditors overawed in their presence, Columbus humbly yet convincingly pleading his cause, the sneering minister vainly trying to discredit the Italian mariner, and Queen Isabella offering to pawn her jewelry. The imagination, if not fettered by this sham of reality, pictures the scene in all its vividness, rich in color, impressive in its realism. Only as we offer a dramatization which produces a situation superior to the mind's product do we lift imagination to higher levels of creative possibilities. The cheap imitations which are typical of dramatizations too fre-

quently perpetrated upon school children work irreparable harm upon the imaginative development of our pupils.

Function of Dramatization.—It must be remembered that dramatization is only an elaboration of the principle of motorization. The reader may recall that the law of motorization was suggested as an answer to the question, "How Give the Mind Better Percepts." Here one finds one of the most important justifications of all classroom dramatization. When a clearer, more accurate, and lasting perception is the desired end, then we let the child learn through creation; to act the process that is being explained guarantees comprehension that is better, richer, and truer. But was there any need of giving a better understanding of the events in history to which we have referred? The child grasped very easily all the facts of the lessons: his imagination pictured all that could be read out of the scene. Motorization was therefore unnecessary. In teaching many topics in civics, on the contrary, motorization was suggested as the most effective appeal. In trying to give a clear outline of the government of the local community a teacher will soon find that clear and vivid perception of the organization of the government and the function of the important officials is best attained by having the children elect their Mayor and Board of Aldermen. In succeeding lessons the former meets with his cabinet of commissioners, the latter discussing in parliamentary form problems of local interest. Motorization is the justifiable mode of procedure in this case because clearness of comprehension is in danger, for even an adult is sometimes lost in the complexity of the ramifications of city government. "Will dramatization give a clearer perception of the topic?" is therefore the question which determines the appropriateness of the application of the principle of motorization.

Dramatization for Emotional Appreciation.—There is an important exception to this law of motorization which is found in literature and kindred emotional appeals. It is our common experience that we cannot fully appreciate the characters we meet in history and fiction, nor can we feel their

longings, their hates and loves, their hopes and ambitions, unless we take the subjective rather than the objective attitude toward them. To relive their lives we must not only assume their mental attitude but also their very physical posture. To catch the spirit of an action we perform the act. Meanness unperformed does not debase, kindness unexpressed does not ennoble. This simple truism has its classroom application.

If the teacher is anxious to have the child feel the indolence of Rip and his "aversion for all forms of profitable labor" the child must be made to dramatize as he reads. "Rip would trudge along wearily, with his heavy flintlock on his shoulder." Children reading *Evangeline* cannot appreciate the dramatic force of the church scene unless they actually live through it by some form of dramatization. The children must all come into the class room as if assembling in the church in response to the orders of the commander of the warship in the harbor. The door must be shut in imitation of the clanging gate. The child who is the captain arises to read the order of banishment. Deathlike silence pervades as the cold, gruff voice announces the doom of the simple Acadian folk. Gradually "the tumult of angry contention" breaks out, Basil shouts his defiance as the "hand of the soldier smote him." In the midst of this tumult the door opens again and the child impersonating Father Felician enters and dramatizes,

"Raising his reverend hand, with a gesture awed into silence
All that clamorous throng. And thus he spake to his people;
Deep were his tones and solemn; in accents measured and mournful
Spake he,"

Assuming the "tones" of Father Felician the child recites:

" 'What is this that ye do, my children? What madness has seized you?
Forty years of my life have I labored among you, and taught you,
Not in word alone, but in deed, to love one another!
Is this the fruit of my toils, of my vigils and prayers and privations?
Have you so soon forgotten all lessons of love and forgiveness?

This is the house of the Prince of Peace, and would you profane it
Thus with violent deeds and hearts overflowing with hatred?
Lo! where the crucified Christ from his cross is gazing upon you!
See! in those sorrowful eyes what meekness, and holy compassion!
Hark! how those lips still repeat the prayer, 'O Father, forgive them!'
Let us repeat that prayer in the hour when the wicked assail us,
Let us repeat it now, and say, 'O Father, forgive them!'

As the child finishes his plea all the children carry out the action suggested in the lines:

"Few were his words of rebuke, but deep in the hearts of his people
Sank they, and sobs of contrition succeeded the passionate outbreak,
While they repeated his prayer, and said, 'O Father, forgive them!'"

Children of school age cannot "see" the contrast, the change from the frantic panic-stricken mob to the Christian congregation submitting in the spirit of meekness and compassion to what to them was divine will; from open defiance in the face of military force to "sobs of contrition" at religious appeal. Only as this scene is dramatized are the children gripped emotionally in the sway from tumultuous outbreak to compassionate prayer.

Psychology to-day teaches that an emotion without its physical accompaniments is impossible. "A disembodied human emotion is a sheer nonentity," James tells us. The teacher seeking class-room application of this principle realizes that all emotional situations must be dramatized even if the situation is comprehended. If literary inspiration is to be caught rather than taught, then dramatization is the only mode of approach.

But see how the same exaggerations that were noted in history are often reproduced in literature. A teacher of a first-year class taught the story of the cat that stole the rat's tail. The rat pleads for its tail, and is told that it will be returned provided the rat gets the cat a glass of milk. The rat goes to the farmer with the request, only to receive an answer that if it can get him something from the maid he will oblige the rat. A series is started which forms a pleasant cumulative tale. The teacher had one child act as the

rat, another the cat, both were on the floor on all fours. Then a third child stood in the corner, window pole in hand, scratching the floor in imitation of raking the hay. What value has such dramatization? There is no emotional appeal for which the children must be prepared. The child has seen too many cats and rats to need the crudity of the children on the floor. A city urchin who has never seen a hay field and a farmer raking hay forms no intelligent image of the situation despite the boy with the window pole. The child whose pale of experience includes such a situation finds that his imagination is offended by this dramatization. What, then, is gained? Not only are there no beneficial results in the wake of such teaching, but a decidedly weakening effect is produced on the imagination.

A popular argument insists that a child's mind must have some crude concrete object to start the chain of images flowing. The child at play reflects this need. The chiffonier becomes his castle, for he is an ancient knight; the chairs are the impregnable hills; the rocking horse or even the mere broom handle is the fiery steed that outstrips Pegasus. The little girl playing "house" bestows on her rag doll the tender care which elemental maternal instinct prompts. But we must distinguish between the imagination in play and the imagination in serious intellectual appeals. In the latter circumstance the impulse for imagination comes from without and is often imposed upon the child. The pictures and the conditions that the mind paints in these serious lessons must be real. The disparity between the situation in the dramatization and the circumstances that the mind can conjure up must be in favor of the dramatization, otherwise imagination finds itself unduly checked in its flight. The staged drama does not deliver the author's message if the actors are not, for the time being, the very characters they impersonate. Unless each situation is real to the actor the play does not come across the footlights.

But in play the impulse to set the chain of imagery in motion comes from within. It is instinctive and craves ex-

pression. It needs only a rag doll to arouse all the latent maternal impulses dormant in the little girl, only the rocking horse and the chairs to call up all the physical heroism of the race concentrated in the lad. The play instinct coupled with the free and fantastic imagination which characterizes this period of youth is known as the mythological tendency of childhood. In the light of this explanation of imagination in play it is readily seen why the child finds less intense joy in an elaborate toy than in a crude one. The little girl cannot really play with the doll of infant's size, dressed in the height of fashion, and reclining in a real "go-cart." Too much is done for the mind. The conditions, though not real, nevertheless approach the real too closely. The imagination, instead of transporting the child into the realm of the child world, where possibility and probability are negligible factors, is tied down by this sham reality. The same sad result is repeated with the boy who is given toy wagons, horses, engines, and self-propelling automobiles; they are too large and lifelike and paralyze the wings of fancy.

III. Encourage the Imagery of the Real and the Possible.
—How can the teacher tell whether imagination is developing and responding to the cultural influences of education? Imagination of a higher order is characterized by increased ability and added facility in so arranging and ordering elements of old experience that the final results are within the pale of possibility. The psychologist, though not underestimating the imagination of a Munchausen, places that of the inventor and constructive social reformer upon a higher level of development. This standard is natural from a genetic point of view. It is our common experience that the child's imagination knows no limit of possibility; it runs riot and often defies logical organization of facts. The beanstalk must grow up overnight, the rubbing of the lamp brings the genie, the wave of the wand can transform the fisherman's hovel into a royal palace. As the child grows older and passes out of the representative stage of psychic life, we find that the old stories lose their fascination, and fairy tales cease to

please; the child yearns for stories of real adventure, of biography, and history. "Is it a true story?" they constantly ask. The imagination is no longer lawless, it becomes bridled and disciplined. It seems as if "the daylight of reason soon dissipates the shadows and phantoms of the imagination."

The practical teacher finds in this development the clue to the method of educating the imagination; for to exercise the imagination educationally means to direct it, to force it into the realm of possibility. Hence, the suggestion to teach cities and foreign countries in a manner designed to create a picture reproducing actual conditions, seeks to educate the imagination. So, too, in teaching history, a battle is presented in all its details; by the aid of a diagram of blue and gray colors the exact position, the manœuvres, the line of march of the armies at Vicksburg are made clear. While the child's imagination supplies the roar of the cannon and the human havoc, the teacher forces the child to systematize and organize his images until there results a mental picture of the battle as nearly like the real one as possible. In literature, too, we must stop at the description of Acadia and lead the child to posit the village in the valley of Grand Pré, the forest to the west, and the great ocean kept out by dikes on the east. If necessary the relative position of these three places must be indicated by diagram on the blackboard, not because the information is absolutely essential for the comprehension and the appreciation of "Evangeline," but because this practice forces the imagination to create a semblance of what is real, and in that measure strengthens it. The first principle, "Supply proper material for the imagination to work upon," is reënforced by this final suggestion.

Undesirable Forms of Imagination

1. **Confusion of Fact and Fancy.**—No study of imagination is complete without a word of caution concerning the undesirable forms that it may take. These, in the main, are

three: First, is the tendency to confuse fact and fiction, especially if the fiction is vivid and capable of appealing to the mind's constructive powers. Stories of bogymen, monsters, and the like, poison the imagination by feeding it with material which makes it a curse rather than a blessing, for it racks the child emotionally with the dread of what it can conjure up.

2. The Reverie.—The second of these perverted forms is the reverie. Constructive imagination, when it makes itself manifest, is exceedingly active and insistent. In a previous connection it was observed that the expression of any power that is growing gives a feeling of pleasure which is known as interest. This satisfaction is due to the relief which is experienced in giving vent to an active, urgent craving. Hence the child in this imaginative age delights in day dreams and reveries. An over-indulgence in these is dangerous, for they tend to make the child a passive victim of his stream of consciousness; they lead too frequently to habits of indolence. Should they be discouraged? The execution of this task is wellnigh impossible. These idle fancies can be utilized very readily. Constructive imagination either produces a desired result or ends in "airy nothings," the reveries. Parents should encourage children who are given to day dreams to write out the ideas that come to them, to draw what their idle conceits suggest, or, in one way or another, to seek to utilize these fancies and direct them to useful ends.

Imagination that leads to action is a blessing, it makes for a productive life. Imagination that ends in itself is often a hindrance in life, it makes for the reverie, the static, indolent, useless mind of the idle dreamer, "the idle singer of an empty day."

3. Indecent Imagery.—Another undesirable form of imagination is found in the expression of indecent imagery that fills the mind during early adolescence. It has been part of the disagreeable, yet instructive, experience of many teachers to read notes that children write to one another, and the sen-

timents they express on the fly leaves of the textbooks and even on the walls of buildings. The shocking indecencies expressed in them are manifestations of a growing imagination feeding on raw material. "What shall we do with such a child?" the distracted parent asks. The remedies and aids are simple, and they are numerous. There is no reason for hysterical alarm and ultra-pessimism, nor are such manifestations indicative of a depraved nature. Biography is replete with illustrations which show that many of the inspirational figures in human progress and civilization were given to such weaknesses in youth. They outgrew the stage of mental perversion as they did their measles, for the mind, like the flesh, is heir to many ills. The teacher must realize that whatever may be the effectiveness of corporal punishment this surely is no occasion for its use. A change for the better can come about only as we secure the child's coöperation, for the transformation must be prompted from within, not forced from without. Moral suasion will be just as futile, for the imagination in such a child is abnormally developed and has an avaricious appetite; material for proper imagery must be supplied.

Suggested Treatment for Indecent Imagery.—Teachers confronted with this problem must make every effort to develop in the child an interest in reading many kinds of stories: biography, war stories, naval fights, myths, historical tales—the whole array of literary form. Coöperation with the librarian of the nearest public library will be helpful, for the teacher can obtain innumerable suggestions and valuable lists of reading designed to meet special needs, to cater to particular interests, to correlate with the specific grades. The child should be urged to join the library and read what the teacher suggests. During special appointments outside of school hours the teacher should talk to the child, learn what he thought of the book, the reason for the favor or the disfavor that the volume may have found. The conference should end with another specific recommendation for the next book, the teacher basing her suggestion on the interests

disclosed in the talk with the pupil. This is the first attempt that can be made to supply proper mental food to the ravenous imagination of the child.

A second saving procedure in this precarious stage of development of imagination is to inculcate and foster an athletic interest in the child. The physical fatigue, the mental exhilaration, the nervous strain of the competition, the persistency of interest and endeavor which athletic sports invariably bring are all efficient counteracting agents, for they seek not the repression of mental energy but its proper utilization and guidance. Another means of getting the child away from himself in this critical transitional period is to insure proper companions who are organized socially for some social purpose. Membership in a club and participation in the varied affairs and interests of the club are means of bringing about this desired end. A properly organized and supervised club is a direct agent for untold intellectual stimulation, emotional refinement, and social development.

Anxious parents and teachers will find that still another means of keeping imagination active along proper channels is to encourage the dramatic instinct of the child through participation in dramatics. This is especially suitable for the upper classes of the elementary school and for the entire high school course. The teacher of English who is capable and seriously interested in her work can suggest the skeleton of a story for a play or the dramatization of a literary masterpiece studied during the current term. Children and teacher plan the story, the acts, and the scenes. Each dramatic unit is then made the topic for the composition periods and the play is written by the children. The best dramatization is selected and plans are begun for its production. The children are then concerned with the work of staging, costuming, building of scenery, rehearsals, invitations, and the host of accompanying problems. A careful division of labor keeps everybody busy contributing toward the final success. The teachers of manual training, wood-work, and sewing, of drawing, and of music are now called

upon to collaborate by correlating their work with this dramatization. Throughout this work the whole class should be included and the burden must be thrown upon the children; they must build the scenes, plan the tableaux, care for property, and collect necessary materials; the teacher, through judicious suggestion and planning, fans every spark of enthusiasm into a consuming flame and guides the whole endeavor along proper lines.

Dramatizations of this type have a dignity all their own that merits a position in the course of study coördinate with any other literary or cultural subject. This estimate of their importance is based on a twofold reason. The first consideration is the fact that the child of thirteen or fourteen, especially the girl, is passing very rapidly out of the period of childhood into adolescence; feeling and consciousness are maturing, but they are far from mature; they are exceedingly sensitive and ultra-active; the mind is literally intoxicated with imagination. This power must be utilized. The children's theater is a means of draining this activity and turning it into productive channels. The second reason for suggesting the drama in this period of development is the fact that we take on the character of the actions which we perform. A person who is consciously and deliberately hypocritical soon becomes so unconsciously. Hypocrisy becomes second nature. He who deliberately assumes affectations and mannerisms soon becomes—paradoxical as it may seem—naturally affected. So, too, those who force themselves to be polite and considerate find that the spirit of the activity sinks deep; it soon becomes natural for them to be polite and considerate. The child who learns the part of a certain character in a play, who acts as the character acts, does what the character does, and feels as the character feels, will be influenced accordingly. The child who acts the part of an unselfish, disinterested Brutus becomes, in a way, a sort of Brutus himself. Mr. Chubb, in his delightful way, tells us: "The prehensile power of the child is not so much rational and analytic as imaginative and imitative . . . the way

to get him to appreciate a fact or an idea is not to labor with him until he knows that he knows, but to insure some sort of unconscious imitative reaction. He must unconsciously do something about it. . . . He learns to know this personage, story hero, fairy, animal, flower, tree, by being it, living with its life, imitating it . . .

‘This price the Gods exact for song,—
That we become what we sing.

Children are poets in this sense: they, too, become what they hear and see, and with a still greater intensity what they admire and love.”

But, it may be argued, if acting the hero makes a hero, will not acting the rogue make the rogue? This objection raises a serious issue. It is undoubtedly true that the child who plays the part of an undesirable character, who analyzes the motives behind each act, and tries to understand and feel the selfishness and the hypocrisy of the personage he is imitating may get an insight into rascality that will be injurious, for too often children confuse roguishness with shrewdness. But, with proper care and a little explanation, the teacher can forestall such a perversion of moral estimate. We can arouse the better nature of a person directly and indirectly. The direct means consists of appealing to the better self by presenting what is worthy and lovable and designed to call forth immediate admiration. The method of indirection so presents the bad that it cannot fail to disgust. The child who is to act the rôle of rogue can be made to see the knavery in a light which cannot fail to disgust him. This disgust has its origin in the simple manhood which asserts itself even in the child. To disgust, therefore, is not to degrade, but to appeal indirectly to the better nature.

The children’s theater is an agent for untold good, for it is an educational institution which can be made a most efficacious medium for character and ethical influence. When

its possibilities are fully appreciated, education will make ample provision for it in the curriculum, and stages will be built in the schools, thus augmenting the usefulness of the school structures themselves, as is being done to-day for social work, athletics, and manual training.

SUGGESTED READING

ANGELL. *Psychology*, Chap. 8.

BOLTON. *Principles of Education*, Chap. 19.

JAMES. *Psychology (Briefer Course)*, Chap. 19.

OPPENHEIM. *Mental Growth and Control*, Chap. 9.

SULLY. *The Teacher's Handbook of Psychology*, Chap. 11.

CHAPTER XIX

THE THOUGHT PROCESSES OF CONCEPTION, JUDGMENT AND REASON: HOW DOES THE MIND USE THE KNOWLEDGE IT POSSESSES!

The study of the intellect has been centered thus far around the questions, "How do we know the environment?" "How do we interpret what the senses bring?" "How do we retain what is assimilated?" and "How do we picture life's varied experience?" The four intellectual gifts of perception, apperception, memory, and imagination make us masters of a rich storehouse of facts, somewhat related, in a vague organization, but with a great many possibilities as yet unrealized. The next question is, therefore, "How does the mind use this mental acquisition; how will it begin to actualize the possibilities wrapped up in this vast stock of facts perceived, apperceived, remembered, and imaged?" Psychology answers, "In three ways: through conception, judgment, and reason." These are the three forms of thinking. The first of this trinity, conception, will receive almost exclusive attention in this chapter.

I. Conception

Nature of Conception.—The student can derive a crude notion of conception from the almost classic illustrations offered in elementary psychologies. The development of a concept is outlined in some form like the following: A child sees the picture of an American soldier for the first time and calls him "man." He is told that a man dressed in a uniform, with a gun, sword, military hat, and belt is called a soldier. At a later time he sees a second picture, but of an English soldier. Again he calls this "man," for the uniform is of different color, the hat of a new form, while the gun and sword are absent. The child is told that this, too,

is a soldier, and the reason is pointed out. A third picture of a cavalryman is shown, and the child is told that, despite the differences, he, too, is a soldier, for he wears the uniform and has the appurtenances of the fighter. If a new picture is now shown, that of a French artilleryman, the child says, without any difficulty, "this is a soldier," for he recognizes the essentials that we pointed out as common to the group, "soldier." To the child the word soldier now means, not cadet, nor cavalryman, nor infantryman, but a general class of fighting men, all showing the same essential resemblances, despite their superficial differences. This general notion corresponding to no one particular individual is a concept; that mental activity which evolves such a general idea is known as "conception."

While the illustration is accurate in itself it needs cautious interpretation, for concepts are usually not constructed in this convenient, systematic, inductive mode. Very often a concept is a deductive growth resulting from an active attitude of mind displayed in the acquisition of new facts in the environment. The child forms his idea of "dog" from one dog. Sheep, goats, and even horses are readily included in the same category. But a little scrutiny on the part of the child or a hint from his parents soon discloses differences which prompt differentiating adjectives like "big," "strong," for the noun "dogs." As the child sees other dogs, other sheep, and other horses the crude, indefinite concepts are enriched and acquire definiteness which gives each of them its individuality. It is also essential that the student realize that concepts need not necessarily refer to a class of concrete objects. "To communicate," "To transport," refer to a class of activities and are therefore as rich and comprehensive as the concept "soldier" or "dog." It is obvious, therefore, that adjectives and adverbs are also conceptualized by the developing mind.

Psychological Processes in Conception.—Whether the child evolves its concepts inductively or deductively in early life, it usually goes through four steps in organizing its

knowledge into classes. The first is perception, the accurate noting of the individual presentations as they come within the range of the senses. The noting of each individual soldier or dog in the instances cited is an illustration of what occurs. Comparison is the second step, for now the mind takes note of obvious resemblances and differences among the kindred experiences, yet each presentation retains its own entity. The similarity among the various soldiers, the differences among dog, sheep, goat, horse, reflect this step in the elaboration of the concept. The third activity is a process of abstraction in which the essential likenesses, the inherent similarities are emphasized. Despite apparent differences the mind recognizes the uniform, the military appearance of each class of soldier. At the end of these analytical steps we find a fourth stage in conceptualization, the generalization which enriches and elaborates the original notion. But it must be noted that the concept lacks permanence and definiteness of form until some word is selected as a symbol which seems almost to gather the abstract qualities into one and to give the general notion solidity and structure. This final step is hence constructive and synthetic. The earlier stages in the acquisition of general notions are analytic, leading up to a final synthesis. This accounts for the oft-quoted pedagogical maxim, "In teaching, analysis precedes synthesis." Conception can therefore be defined as the mental process which gives rise to general notions and ideas.

Percept and Concept Differentiated.—There are important differences between percept and concept that must now be considered for a better comprehension of each. A comparison of these important terms gives the following contrast:

Percept

1. It refers to an individual thing or action. In grammar the proper noun corresponds to a percept.

Concept

1. It sums up a class or a general notion. Concepts correspond, in a general way, to common nouns in gram-

Hence a percept cannot be further subdivided without losing its identity.

2. A percept has practically no extension, but great intension; no denotation, but vast connotation. A proper noun has an extension equal to one, an intension which includes all the qualities of the object or action.

3. The mind can form an image of a past percept if it is within the power of recollection. One can image very vividly all that was perceived during an interesting experience.

mar. They can very readily be subdivided without suffering a loss of thought. The concept, "building," can be subdivided into subclasses, educational, religious, business, and living buildings, each in its turn capable of further subdivision yet each maintaining the rational organization of a concept.

2. A concept, on the contrary, has great extension but less intension; vast denotation, but less connotation. A common noun sums up many individual cases, but it possesses differentiating characteristics.

3. As a rule, the mind forms no image of a concept. Some psychologists insist that, under certain circumstances, we may image a concept. Thus, Horne tells us, "We may conceive of a mountain of gold." This is the popular use of "conceive" in the sense of "imagine." The mind calls up first the image of "gold" from some object of this metal; second, the image "mountain" in reproduction of some mountain seen in the past; these two images are fused. There seems to be a

tendency in the mind, not to deal with general notions, but to call up a typical, constituent member of the concept. In thinking of "mountain" we do not think of mountains in general, but merely bring before the mental eye a type, a representative image of some one mountain, which reflects the characteristics of the class.

4. It is obvious, therefore, that a percept is merely the mental photograph of experiences that are stimulating the senses.

5. Percepts resulting from observation lead, therefore, to fact knowledge.

6. Percepts are, as a result, fixed in content.

7. Since the perception gives individual fact upon fact, it leads only to mental growth.

4. A concept, on the contrary, is a cumulative result of knowledge past and present, of ideas that have undergone a gradual process of refinement and elaboration.

5. Concepts, on the contrary, the result of comparison, relation, and generalization, give thought knowledge.

6. All concepts are constantly varying in content. Not only can we subdivide them, but we are constantly enriching them. How little the concept "animal" meant to us as children; how comprehensive it is to our adult minds.

7. Since conception forms classes of ideas, promotes assimilation, it involves a higher form of mental activity which leads to mental development.

Of the two forms of mental activity, perception and conception, the latter undoubtedly stands much higher in the psychic sphere. With judgment and reason it forms, as we saw, the three forms of thought.

Why Cultivate the Processes of Conception?—In the light of the preceding contrast the question, "Should Conception be Developed?" must be answered in the affirmative. There are additional specific reasons to which we must now turn.

(a) It makes for mental economy through organization. Conception may be defined as the power to think the many into one. If not for conception, which prompts the grouping of knowledge into scientific classification, each fact would necessitate individual attention and would have to be cared for by itself. Under such conditions it is evident that the mental scope would be limited; it is even doubtful whether we could keep track of a very small number of ideas if these remained separate and isolated. But with the ever-present tendency toward mental organization, all kindred knowledge is combined and retained in groups. Conception is the mental process which reduces experience to a least common denominator. By indexing and codifying knowledge it is continually making for mental economy.

(b) It makes reasoning possible. In reasoning, abstract relationship between ideas or percepts must be established. All the mental activities that were studied in the preceding chapters are dependent directly upon the concrete. But in conception, with its processes of abstraction and generalization, the mind makes the transition from those psychic results that need the concrete for their proper stimulation to those mental activities that are thoroughly abstract.

(c) It makes science possible. A science deals with classified knowledge, the aim of which is to reach a general principle, a general law of universal application. This reflects on a larger scale what a concept tries to do on a smaller; science may therefore be defined as conceptualized and verified knowledge.

How Can We Help the Mind to Conceive?—We must now

turn to the class-room application of this theory and psychology of mental development. Before doing so the student must understand that, in teaching, a psychological concept is equivalent to a definition of a term in grammar, to a rule in arithmetic, to a law in physics, or physical geography. Hence, stated in terms of a pedagogical problem, the question becomes, "How can we develop for our children richer and more intelligent definitions and laws in the subjects of class-room instruction?" The following may be useful constructive suggestions to the practical teacher:

I. *When Possible and Practical, Arrive at All Concepts Inductively.*—The inductive method of teaching begins by a presentation of the individual concrete things or processes and then leads up to the definition, the law, or the underlying principle. Although a concept may be a deductive result, the component processes of conception, viz., perception, comparison, abstraction, and generalization, naturally favor an inductive unfoldment in teaching. Deductive teaching simply imposes the rule or the definition—the concept—upon the child. Such a generalization is usually not so rich and so suggestive as one developed by a method of induction which takes the mind through the same steps that it would follow naturally if left to itself. This pedagogical conclusion may be illustrated in teaching the rule for multiplication of decimals. The teacher may simply announce "to multiply a decimal by a decimal, multiply as in whole numbers and point off as many places in the product as there are in both the multiplicand and the multiplier." The statement is memorized and applied mechanically. At first it is meaningless, but its use in a number of examples brings light into the darkness. Such teaching is neither invigorating nor attractive; it does not stimulate mental activity which produces rich concepts. But, if we proceed on an inductive basis, the law, when finally evolved, is a summary of much thought, and the result of deep insight. The inductive lesson begins by presenting a number of examples in which it is necessary to multiply, $.2 \times .3$, $.02 \times .3$, $.02 \times .03$. The

children realize that these problems present a new situation which they cannot solve. The teacher sums up this introductory step with "What shall be our next lesson in arithmetic?" and elicits from the children "How to multiply by decimals." The topic is thus motivated and the children have themselves stated the aim of the new lesson.

The lesson proper begins with a number of sight multiplications of the type of 10×10 , 10×100 , 100×10 . The rule which the children know, "as many ciphers in the answer as there are in the two factors," is elicited. This rule is now used in solving the fractional examples of similar form, $\frac{1}{10} \times \frac{1}{10}$, $\frac{1}{10} \times \frac{1}{100}$, $\frac{1}{100} \times \frac{1}{10}$, etc. The teacher now asks the children to translate the common fractions into decimal forms and completes the following arrangement of work on the board:

A	B	C
$10 \times 10 = 100$	$\frac{1}{10} \times \frac{1}{10} = \frac{1}{100}$	$.1 \times .1 = .01$
$10 \times 100 = 1000$	$\frac{1}{10} \times \frac{1}{100} = \frac{1}{1000}$	$.1 \times .01 = .001$
$100 \times 10 = 1000$	$\frac{1}{100} \times \frac{1}{10} = \frac{1}{1000}$	$.01 \times .1 = .001$

A few questions asked of the children direct their attention to the number of places in the product as compared with those in the multiplier and multiplicand. The knowledge that there are as many ciphers in the products of A and B as there are in the factors enables the children to evolve their own generalization for the "pointing off" in C.

Their final statement is a summary of all the ideas they grasped, of all that they saw in the processes, and is far more illuminating and fraught with more meaning than would have resulted if the rule had been given them didactically in the deductive lesson.

The Method-whole.—The steps in the evolution of a concept have been made basic in the organization of a formal inductive recitation called the "method-whole." This is one of the fundamental contributions of the Herbartians, who sought to apply the lessons of psychology to class-room

practice. The method-whole is summed up in five successive steps. The first is the *Preparatory Step*, the apperceptive step in teaching, in which the mind is prepared for the assimilation of the new. Then follows the *Presentation*, in which the child obtains perceptions of the separate and individual elements that are being taught. The third step is *Comparison*, in which the percepts are studied, resemblances and differences noted and emphasized. This is followed by the *Generalization*, the step which formulates the definition or the rule and thus completes the induction and gives the concept. It is in this step that the child obtains a clear, unified impression from all the separate and varied percepts. But induction as a process of instruction is incomplete, for it leads only to the discovery of the general tendency or principle controlling the individual facts. We must see whether the law obtained holds in other specific cases; we must verify it by applying it to specific instances. This is the Deductive Step, the *Application* which must follow every induction if we hope to make the concept accurate and lasting. Kant tells us that percepts that do not lead to a concept are blind, but a concept which does not fall back upon concrete, individual cases is empty. In life the pupil meets specific cases and individual problems. Knowledge in the general form would, therefore, prove useless. The *Application* seeks to develop skill in the use of our mental possessions so that they can always serve our future ends.

The method-whole, when interpreted liberally, used with great latitude, and regarded as a mode of organization rather than a pedagogical straight-jacket, brings gratifying results. The development of the recitation is thus inductive, well-systematized, and follows the mind's own course of evolution. Inductive sequence is not the artificial organization that many teachers feel it to be. The lessons learned from life's cumulative experiences are inductive in their nature. The business man orders his stock for the coming season with the sad lessons of past failures uppermost in his mind. He learned that style is an important item in the proper stock,

that the status of the general industry and prosperity of the people determines the number of customers, that the nature of the population governs the nature of the demand for goods, etc. Through the trials and errors of yesterday we plan each to-morrow. This is essentially an inductive procedure. The scientist, the inventor, and even the theoretical thinkers have developed an art of coming to conclusions that is intensely inductive, for, in any endeavor to reach an inference, they follow four steps. The first is the observation of all the existing conditions, forces, facts, the scrutiny of the evidence. This is followed by an attempt to weigh the evidence, to eliminate useless conditions, to emphasize what seems all-controlling and guiding. The third step seeks to discover some one underlying tendency that seems to be operating among all the facts. The final step consists in coming to a conclusion despite superficial conflicts and variations. Induction is the obvious law in such sequence. An examination of many of the conclusions we reach in the course of daily life will reveal a rather close reproduction of these steps.

But there are teaching conditions and class-room circumstances that warrant the pursuance of a deductive method without apology. There are topics that are long and involved, generalizations that are confusing in their complexity, —these must be told. An inductive development only adds to the confusion and the complexity. To teach long division, or the advanced facts of grammar inductively, is a lavish expenditure of energy and a reckless disregard of time. Some topics are taught for transitional purposes, or to meet the demands of courses of study or local convention. In such instances, deductive teaching meets the end most economically.

II. *Arrive at the Concept through Motorization.*—The principle of motorization and dramatization discussed at length in a preceding chapter, when embodied in teaching, must lead to better concepts for two reasons. In the study of perception and the means of aiding the mind to perceive, we saw the inestimable results which come from learning to

know a thing through doing, through actual creation. The conclusion is therefore inevitable that the clearer and sharper the percepts of the individual things or acts, the richer and truer will their concepts be. Motorization must therefore be again emphasized as a means of giving better conception. The second justification for this principle is the fact that the motor characteristics of any experience always appear the most striking to the child. Since a concept, i. e., a definition, a law, a principle, seeks to embody the most essential qualities, it follows naturally that to teach through motorization is a means of emphasizing what is most vital in the presentation. How prominent these motor characteristics are we can see from a superficial observation of the kind of definitions children give for common objects. Thus they tell us—

A knife is to cut with,	Chimney, to go in by Santa
A pin is to stick with,	Claus,
A mind is to think with,	Song, to fly and sing,
School, all children go in,	Money, to put in your pocket,
Church, all people sing,	Wallpaper, to not scratch it,
Cow, what is milked,	Baby, to put in a carriage,
Picture, to look at,	Napkin, to put around the
Water, to throw stones in,	neck, etc.

In all of these, action is focal in the child's consciousness. Since children define and conceptualize in terms of action and function, we must teach by making the motor appeal strongest. Then, too, we may note, in passing, that the child is wise in his attitude, for the function, the use of an object, is the most essential element in it.

III. *Place the Burden of Generalization upon the Child.*
—When the recitation reaches the fourth step—the generalization—the question, “Who should evolve the law, the definition, or the principle?” is uppermost. Teachers who call upon their pupils for a statement of the generalization find that the child seems unprepared, for he hesitates and takes hold of the wrong end. Generalization is a difficult step for

the child. An investigation into the reasons brings two important causes to the surface.

Why is Generalization Difficult for the Child?—A child is often lost in the generalization because the ideas and relations gathered in a study of the individual facts are not clear. He may see too much or, on the contrary, too little. The child who calls parents a pronoun because it stands for father and mother sees too much. For him the difficulty in arriving at a generalization of the pronoun is just as great as if he saw too little. Then, too, he may understand each individual case, but he may not see deeply enough to discover the underlying connection, likeness, or unity of aim which will enable him to organize them all into the one concept. After the teacher's demonstration and explanation of a fraction the children concluded, "A fraction is a part of a thing." They did not see in all the individual examples given by the teacher the relationship of equality among the parts of the unit, and therefore gave a faulty generalization. As children begin to apply such a definition or law they uncover its limitations in the vast number of instances that come to the surface.

Children find the generalization difficult because of paucity of vocabulary. The child's comprehension of the facts presented and compared may be accurate and reliable, but he cannot sum up his conception because he lacks the necessary phraseology. It is true that words are only a test of the child's comprehension, that the thought, not the mere phraseology, must be considered the important element; but the child must nevertheless word his ideas well enough to make the teacher feel that the concept is grasped. Although words are only the mechanical part of the definition, they are nevertheless a *sine qua non* in the lesson.

Who Should Generalize?—In the light of this analysis the initial question, "Who should evolve the generalization?" is answered. Since the difficulty is a twofold one, of thought and of expression, it is obvious that both teacher and children must generalize. The best form of teaching demands

that the thought of the concept should be formulated by the child, while the language should be modified and refined by the teacher. If the thought element of the rule comes from the teacher, what assurance have we that the child has a clear, definite comprehension of the individual incidents and facts presented, or that he has grasped the underlying tendency? The generalization must be the result of the pupils' own self-activity; in the initial step they may state it in their own limited way, with all their glaring deficiencies of expression. For this reason the teacher may supply the more select words, but this may be done only after he has obtained sufficient evidence of the clearness and definiteness of the children's ideas. Thus we may object to the definition, "a preposition is a word that shows the business a noun has with any part in the sentence." With all its crudity of expression, it reveals comprehension of the verbal relationship taught. The temporary language difficulty is solved by the teacher after the child gives such a guarantee of understanding.

The Stereotyped Definition.—While it is true that a definition should be well worded when finally stated, we must nevertheless take extra precautions with the stereotyped forms. How often do we hear children recite, "An abstract noun is the name of a quality, considered apart from its substance," "A concrete noun is a common noun that denotes an object or a class of objects by a union of qualities," etc. But when we ask the children to explain or to apply these well-worded definitions, what dire results! In the words of McMurry, the child and the teacher are playing "hide and seek" with phrases. They are "masquerading with words." Words here are empty sounds, not vehicles of thought. How much more satisfactory would be the informal definition given by the children, "an abstract noun is the name of a quality that cannot be seen or touched; a concrete noun is the name of a thing that can be seen, touched, or heard." To be sure, the wording is less elegant, and the statement unscientific, but there is a positive thought foun-

ation that makes the words symbols of ideas. What child understands the meaning of "considered apart from its substance," "a class of objects by a union of qualities"?

How Shall Children Learn Definitions?—The best method of treating a definition is not even to require the children to memorize the one constructed by them and modified by the teacher. Instead of the all too common practice of memorizing set definitions we ought merely to ask the child to remember the thought elements in definitions. Thus in learning the preposition the children memorize (1) it connects, (2) shows relationship; in studying the active transitive verb, (1) shows action, (2) action goes over to an object; in considering division of fractions, (1) select the divisor, (2) turn it upside down, (3) multiply. These the children learn after they are derived in the class. When called upon to recite in the future they frame their own definitions bringing in these thought elements. The mistakes in language are corrected by the teacher. Having the component ideas, the words will not only follow more easily, but will also mean more, for the child is concentrating on thought, trying to reproduce ideas, not sounds learned in parrot fashion.

The Generalization a Communal Result.—There is no particular advantage in making a rule or definition the result of any one child's effort. We should learn to accept as much as a pupil offers. Generalization is difficult and a pupil should be credited for seeing a part or a phase of the truth, if he cannot see the whole of it. Let each child feel that he can contribute one iota, can suggest one trifling change or improvement of his neighbor's work, can add something in accordance with the hints and suggestions that the teacher is giving. We may be seeking four elements in generalizing toward the end of the lesson on "Burgoyne's Invasion," but no one child may be able to give more than one. Accept each until the generalization is built. One child sees "Therefore England had to abandon the idea of cutting the colonies into two," another "it encouraged our disheartened troops,"

a third "It brought us French aid," etc. The children feel that they are working toward one common goal, that the result is a communal result which belongs to no one exclusively. The generalization, finally established, has a peculiar meaning and warmth for each child because each individual sees his own personal effort and thought reflected in the composite whole.

Value of Placing Burden of Generalization Upon the Child.—In the practice of placing the burden of generalization upon the child, there are a number of inestimable teaching advantages which we cannot afford to lose. These may be grouped under three captions: (a) This form of teaching arouses a maximum of self-activity on the part of the child. The pupil must be active, think deeply, concentrate to his utmost if he is to formulate a generalization to cover all the specific cases presented in the lesson. (b) It is an excellent means of testing the scope and accuracy of the pupils' knowledge. In expressing his concepts, the child betrays whatever superficialities and misconceptions he may have in his mind. The teacher watches carefully for these limitations, for they determine the gradation of succeeding lessons, they indicate what must be retaught and where the teacher's methods were at fault. (c) In the presentation step of the recitation the teacher hopes to give a great number of varied impressions from the multiplicity of data. When the child generalizes he not only gives expression to these impressions, but he sums them up in one general idea. Hence we may say that the final advantage of this teaching practice is that it causes a unified expression of the many and varied impressions.

When Learn a Stereotyped Form of a Generalization?—There are exceptional teaching situations in which a textbook generalization may well be adopted. Usually the teacher who knows his subject and is developing it in his own way finds that he can do better by using his own definitions and statement of rules. Having been developed by teacher and pupils, such generalizations seem to mean more.

If the statement in the book is a duplication of the one developed in the class, it is obvious that we may use it. There are times when a formal generalization has superior merit and is expressed in a commonly accepted, or a classical, form. At the end of a reading lesson the children and the teacher conclude, "it is better to be right than strong," or "it is easier to win if we are together." In such cases, we should not hesitate to teach "Right makes might," for the first, and "In unity there is strength" for the second statement. These expressions being proverbial, there is intrinsic worth in the very phraseology.

Can the Generalization Ever Be Omitted?—It frequently happens in the course of teaching that occasions arise when a formal generalization is better omitted than expressed. In long arithmetical processes like square root, least common multiple of large numbers, long division, in complicated conceptions of grammar like case, mood, etc., the concrete facts and the solution of problems are far more desirable and helpful than the long and laborious statements. The child who can find the square root of 5025, the L. C. D. of $\frac{1}{2}$, $\frac{3}{4}$, $\frac{5}{8}$, who can differentiate the various specific cases and moods, when he meets nouns and verbs in sentences, has just as great a mastery of this knowledge as his classmate who mouths the long, pretentious generalizations. Where the child shows ability in applying knowledge, insistence on formal statements entails unjustifiable expenditure of time and mental energy.

IV. "*Review*" and "*Thoroughness*" are Aids in Proper Conception.—Another means of giving the child a better general conception of the subject taught, is to enrich it through reviews and thoroughness of treatment. In an earlier chapter it was shown that review and thoroughness in the technical educational sense mean a new view and deeper insight into the first conclusions that were evolved. The following may be offered as further illustrations of the point: in teaching the climate of South America the teacher explains that Argentina is very fertile in its southern part;

that Chile is a desert in the same latitude. The reasons given are that in that particular region of the South Temperate Zone the prevailing winds are easterly, and as there are no mountains on the eastern coast of Argentina the clouds are brought over the land and drop their moisture; but, by the time they come to Chile, either the water in the clouds is all gone, or the mountains stop their travel. Hence Argentina, being east of the Andes, receives all the benefits of rainfall and has the Pampas with their luxuriant growth of grass, while Chile is only a desert. In "reviewing" the climate and rainfall of this region the teacher asks: "What would happen if the Andes were brought over to the eastern coast?" To trace the new conditions and account for all that the child says will take place necessitates not only a faithful reproduction of the explanation given, but a deeper and truer grasp of the governing laws of climate. This then is "review," "thoroughness," in the technical sense, as opposed to mere drill. It is evident that such treatment of a topic gives a concept which is more suggestive, richer in meaning, and more accurate in its intellectual grasp. So, too, such questions as: "What would happen to the desert of Sahara if we placed a high mountain range along the northern coast of Africa?" "What would happen if the Alps were removed from Europe?" "What changes would you expect in (1) climate, (2) products, (3) industries and occupations, if the Appalachian and Rocky Mountain systems were interchanged?" are review questions which seek to give a more thorough concept.

V. *Correlation as a Means of Enriching Concepts.*—The new points of view that are the essence of the thorough review can be brought about through a wise use of correlation in teaching. To show the geographical side of a history lesson, the historical side of a geography lesson, to analyze in the grammar period those sentences of the literature which presented difficulty in interpretation, to write compositions on the men studied in history, to study the detailed commercial geography of England in the same class where we teach

the development of her commercial supremacy, to base the whole slavery question on the geography of the United States,—are examples of correlation, which seek to give better insight, enriched comprehension, and additional points of view, until there result concepts rich in thought and deep in intension. To tell the class studying territorial expansion that we obtained Florida in 1819, because the Indian outrages and the alleged complicity of the Englishmen so angered Andrew Jackson that he completely forgot himself and marched into foreign territory, despite the international regulation which forbids such action, gives one conception, a meager and unsatisfactory one at best. But when the lesson is correlated with geography, the child sees that West Florida contained the mouth of the Mississippi River, that the United States could not obtain all the benefits accruing from the possession of the Mississippi without enjoying undeniable ownership of the mouth. The teacher can readily make the pupils see that the Indian outrages were almost a welcome provocation to march into the territory and begin a little trouble, thus offering a good reason to start negotiations in the hope of convincing Spain of the wisdom of selling Florida to us. At the time of the purchase of Florida, the United States saw little value in the unoccupied peninsula, and was not at all alarmed at the threatened complications with Spain; West Florida was the desired land. Without correlation with geography this history lesson means little; with it we give a deeper conception of the problem of territorial and commercial growth.

Psychological Justification of Correlation.—Aside from these practical advantages, correlation finds no difficulty in justifying itself on psychological grounds. A fundamental psychological law teaches that nothing remains isolated in the mind. A new fact is seized upon by old ideas and associations; innumerable relationships are at once established between itself and the stock of old knowledge. Until this association takes place a new fact remains meaningless. A primary maxim of teaching hence advises, "Establish for

any fact as many relevant associations as possible." In discussing the type form of presentation, we saw that the same unifying and integrating principle holds true in the world of fact as in the world of ideas. All subjects are branches of one universal subject; they are only different view points of the same mass of material. The fact that all mentality is opposed to isolation and that all knowledge is really one, makes correlation an exceedingly important principle in teaching, for the law of organization is the law of development. Correlation may be defined as that process in teaching which seeks to establish such connection and interrelation of subjects, that unity of impression may result out of the great number and variety of subjects.

Correlation in the Modern Curriculum.—The modern problems arising from the over-crowded curriculum make correlation a subject of more than passing interest. Comparing the present school curriculum with that of one or two generations ago, we find that in the latter very few subjects were taught, primarily, because few subjects were needed. Life was far simpler than it is to-day. The average man felt that he was born in a certain station and that he must adjust himself to the best and happiest life in his own class. The social organization of the day tended to permanency, to continue the individual in the same stratum. Because of this greater social stability and because of the simple demands which life made, even those in higher stations felt no need for much more than the three R's; a little philosophy, logic and history gave the elements of a liberal education. Though the channel of knowledge was narrow, it was nevertheless deep. Fine subtleties and endless hairsplitting, which are characteristic of old text-books, give evidence of the courses of study of the past.

What a contrast is presented in the elementary school curriculum of to-day with its long list of subjects: arithmetic, grammar, composition, spelling, dictation, reading and literature, history, civics, geography, nature study, drawing, music, manual training and the domestic arts, physical train-

ing, physiology and hygiene. A chance observation of the applications of science to every-day life impresses one with the complexity of modern existence. The comparative social fixity of yesterday has given way to keen competition and intense struggle which come with a wider scope of opportunities and newly awakened ambition. In the social flux of to-day everyone is striving for the next rung in the ladder. The new conditions under which we live are responsible for the new curriculum. It has come in answer to life's pressing needs. But while the channel of school knowledge has grown wider it has also become less deep. This inevitable result reflects the origin of two very common adverse criticisms of modern elementary school education, viz., the school is too encyclopedic in its extensive array of subjects, and its teaching is too superficial, for knowledge must be smeared thin in such an over-crowded curriculum. To these two indictments the modern school must plead guilty. An examination of its average graduates discloses irrefutable evidence.

What remedial measure can be offered? The obvious solution presents itself to the student;—reduce the intellectual load which the school carries. The remedy is both temporary and unscientific. If we grant that each school subject was introduced not because of the whim of educational supervisors, but to answer new needs of changing life, elimination is not an effective solution. If life's demands are the standards of addition to the curriculum, then most of the subjects must remain. We must seek the remedy in simplification and unification of the encyclopedic curriculum. With social need as a pedagogical standard, it was seen that much that is useless and merely traditional in each subject can readily be eliminated; from this it is evident to the practical teacher that much deadweight in arithmetic, grammar, geography and history can be sent to the scrap heap of useless facts. With correlation as a guiding principle of teaching, the two criticisms cited can be counteracted,—not completely,—but to a very great extent. Correlation by inter-relating the vast knowledge stock would

produce a unified, compact, and well-organized course of study. Since correlation is also a means of association, of giving new view points to old ideas, it would result in increased thoroughness of comprehension. Concepts would, therefore, be fewer, richer, more lasting if organization through correlation were made a basic endeavor in teaching.

SUGGESTED READING

ANGELL. *Psychology*, Chap. 10.

DEWEY. *How We Think*.

HORNE. *Psychological Principles of Education*, Chap. 12.

JAMES. *Psychology (Briefer Course)*, Chap. 14.

SCHAEFFER. *Thinking and Learning to Think*, Chap. 7.

SULLY. *The Teacher's Handbook of Psychology*, Chaps. 12 and 13.

CHAPTER XX

THE THOUGHT PROCESSES OF JUDGMENT AND REASON

The study of the thought activity began with the question, "How does the mind utilize all the material that it has perceived, apperceived, remembered and imaged?" The answer was, "Through the thought processes of conception, judgment and reason." We have already directed our attention to the first; we turn now to the other two, judgment and reason. These two are so closely related, shade into each other so constantly, so gradually and imperceptibly, that we shall study them together, especially their application. At the beginning we shall consider each alone; hence we turn to the second of this trio of thought activities.

II. Judgment

The Nature of Judgment.—The first thinking activity, conception, produces concepts. After having reached some degree of proficiency with concepts the mind begins to group these concepts, to associate or dissociate them in a number of ways. We say, "Tigers are kinds of cats,"—"Thinking is a useful process,"—"Straightforwardness inspires confidence,"—"Straight lines are shortest distances," etc., etc. These statements about concepts, called simple sentences by the grammarian, and propositions by the logician, are termed judgments in psychology and in teaching.

When Do Judgments Arise?—All our previous mental results and mental processes are quickly transferred into the

realm of the habitual. The percept, we saw, is due to brain habits. Sensations that are repeated and that are similar in nature and intensity call up the same habitual apperceptive mass; the fusion gives the percept, which is formed mechanically. If we have an available concept, it is called upon, and conception takes place in the same mechanical way. Hence all these forms of mental activity tend to mechanize our psychic life. But judgment rises above the mechanical and routine acts of the mind. It shows purpose and decided intent. A bicyclist rides daily over the same route; the same obstructions and hindrances bring up the same reaction; mechanically or automatically he solves each problem as it presents itself. But suddenly a new situation arises, for, as a rule, he is not forced into a position where he finds himself between two wagons and his escape cut off on both sides. Here is a new situation, demanding a new reaction,—lose the wheel and jump on the wagon, or keep the wheel and take chances of death! He decides, “The wheel is worth less than the risk,” and he therefore jumps. This is an act of judgment, demanding purposeful and intentional action. We may say then that judgment will come when we need a new adjustment,—a readjustment of old conditions or elements in the environment. Hence, only as we present new conditions in teaching, show a conflict, a new agreement or a disagreement between old ideas, do we call up the child’s power of judgment. The teacher must realize therefore that to tell children, “Think before analyzing the sentence or attempting the solution of the example,” is one of those vague commands which brings added confusion and increased helplessness. If we want our pupils to think, the problem assigned must be definite and call for a new relationship in old experience. Such questions as, “Compare the government of New York Colony with that of Virginia,” “Indicate what is given and what is to be found in this problem,” “How does this bill practically repeal the Missouri Compromise,” “To what extent was John Brown right in his protest against slavery,” “What would you have done in Wash-

ington's place at Long Island in 1776," "How would you test for the difference between the two words 'who' in the sentence, 'Who was it who came into the room'," are designed to stir the mind to thought without the direct command of the teacher because they suggest possible conflicts or readjustments in old subject-matter.

Judgments, we noted from the examples given, contain two concepts and express a relationship between them, "straightforwardness and confidence," "thinking and useful acts," "tigers and cats," etc. In all cases a verb connected these two concepts and the three elements formed the entire result of the mental process in judging. Hence we may define judgment as *a purposeful and intentional act of the mind in which we seek to discover the relation between any two ideas or concepts*. Other definitions advanced are: "Mental function and act of predication or assertion." "Asserting an agreement or disagreement between two ideas," "The process of discovering relationships between two ideas," "The process of coming to a decision." As a rule we find that the typical definitions that are cited fail to emphasize the fact that a judgment must not be placed in the same group with the mechanical reaction of the mind. In defining judgment it is necessary to state clearly its intentional and purposeful nature.

Relation of Judgment to Other Modes of Mental Activity.—

Judgment has been called the elemental process of the intellect. This is due to the fact that it is basic in perception, apperception and conception. In fact, no form of psychic life is free from it. Unless we judged, we would never call up the proper apperceptive knowledge, nor could we, as in conceptualization, compare percepts and find those likenesses which are inherent and basic. Without judgment of one kind or another the content and the spirit of our psychic activities would be lost. This fact we must note for education, but the quibble as to which is first, perception or judgment, is useless, for it restates the old puzzle of the egg and the hen.

Kinds of Judgment.—There are as many kinds of judgments as there are writers on education and psychology. Each one forms his own classification for general use. We must notice one important classification, Intuitive vs. Deliberative Judgments, for it appears very frequently in our educational literature.

When a judgment is performed instantaneously, without deliberation and conscious effort, it is known as an intuitive judgment. A better name would be "habitual judgment." It characterizes the expert as against the ordinary layman, for "Intuitions are beliefs and judgments which present themselves spontaneously to the mind with irresistible evidence, but without the assistance of memory and reflection They are forms of knowing otherwise than by observation and deliberation." The trained neurologist, from a momentary glance, pronounces the patient an epileptic. The expert surgeon, without reflection, instantly stops operating as a new symptom shows itself, or cuts deeper as the case may demand. The experienced teacher knows what child must be humored and which one can be "crossed." He seems to have a special gift which enables him to act intuitively, and yet unerringly. Bagley, in his "Educative Process," classes intuitive judgments under three heads: (a) Sense Intuitions reflected in such exclamations as "It is a hat"; (b) Intellectual Intuitions exemplified by any mathematical axiom; (c) Moral Intuitions illustrated by such moral estimates as "Honesty is a desirable trait of character," "Deception is a vice."

Deliberative judgments on the contrary are the result of reflection and deliberation. "Every man is equal before the law," "Violence is never justifiable," are examples of judgments so obtained. Of the two kinds of judgments the intuitive is by far the more reliable. This classification is helpful because it emphasizes the degree to which our mental lives are dominated by the laws of habit. It was shown that perception, apperception and conception are mechanical and habituated acts of the mind. But judgments, whose dis-

tinguishing characteristic in the initial stage is the fact that they are not mechanized, tend as far as they can to become habitual, so that a reaction can take place within as short a lapse of time and with as little deliberation as possible.

Causes of Defective Judgment.—In our general experience we discover how frequently untrained minds judge incorrectly. In diagnosing these incorrect judgments one finds the cause of error in one or more of four conditions. Passing mention of each of these may prove helpful to the teacher confronted by the problem.

(a) *Lack of Experience.*—The mind has an actual aversion for individual facts and experience. In its desire to conceptualize and relate experience in judgments it forms conclusions from a few accidental facts. The plural of “lady” and “baby” is “ladies” and “babies” respectively, hence the child concludes, “all plurals of singular nouns ending in ‘y’ are formed by changing the letter ‘y’ to ‘i’ and adding ‘es’ ”; but when we ask, “How about ‘boy,’ ‘boys’,” the pupils realize that “jumping at a conclusion” from limited data causes erroneous judgments.

(b) *Lack of Clearness of Ideas* is obviously another frequent cause of defective thinking.

(c) *Lack of Reflection.*—It was just noted that the mind has a tendency to leap to conclusions. In this mental impatience, superficial relations and accidental likenesses are taken for basic qualities and judgments are made accordingly. With no appreciable reflection whatsoever a student concludes “the whale is a fish.” A moment’s thought and hesitation would have shown that the few accidental peculiarities noted in passing observation are insufficient evidence for such a judgment. Teachers are constantly finding lack of reflection an aggravating cause of incorrect thinking. Children seem ever ready to answer questions as soon as they are asked. If time for reflection were taken the number of absurd and irrelevant answers would be perceptibly decreased. Some teachers find it advisable to refuse to accept answers until a number of seconds have elapsed. Not until the signal

is given are hands raised. This tends to break the impulse to speak immediately and in the meantime the mind is forced to examine its conclusions and perhaps realize the ridiculousness of the answer. To forbid raising of hands is not a bad practice. Children must wait until called upon, and the teacher waits long enough for them to think. Another practice designed to discourage this tendency toward hasty judgments is to state the conditions of a problem, without asking a question; a number of children will invariably raise their hands to answer, only to regret their haste when they realize that a trap was set for them. The grade teacher is driven to such petty methods and devices in the attempt to discourage faulty judgments due to lack of deliberation.

This lack of reflection shows itself in other ways. Too many people accept views and opinions of others without subjecting them to individual scrutiny. Blind authority makes mental parrots of us all. How many go hiding behind words whose meaning is unknown! How quickly are we crushed intellectually because the accusing finger is pointed to the recognized authority! How dare we accept any other statement, follow the dictates of personal judgment in the face of authority! The lecture method, altogether too prevalent in the college and the high school, is already showing the inevitable results of a system of instruction based on the receptacle theory of the mind, glorifying in the quantitative aspect of knowledge, and making for mental subserviency. There are conditions where the lecture method of instruction is the only system possible, but it is no exaggeration to state that fully half the lecture courses follow this mode of instruction for no legitimate reason. Much of the mental indolence and the emasculated thought of college students can be laid to the door of the lecture system. As was observed in the discussion of the drill lesson, the degree of discomfiture which a method produces among the students is often a direct measure of its pedagogical merit. We must teach our students that men think with their backbones.

The elementary school teacher, however, may well ask, "How far shall we encourage children to challenge our statements? Shall we merely allow them the liberty to ask questions when they are in doubt? If our answers do not convince, because the children do not understand them, shall we respect the pupils' views?" These questions cannot be answered absolutely. George Eliot tells us, "Let children accept everything and they are mental slaves—reason all the time and they become monsters."

As a general policy we may say that when it is a question of taste or of preference, let the child have its own way. If, on the contrary, it is a matter of fact, then the child must submit absolutely, and accept the teacher's authority as final. Thus, a child's design may violate the law of harmony, but he likes it better than the one suggested by the teacher. It is of greater benefit to let the child have his æsthetic preference than to force a result upon him that is not to his liking. If it is a matter of perspective, then the teacher's suggestion must be followed, for now it is a matter of right and wrong.

(d) *Bias of Feeling.*—Our mental prepossessions and our prejudices determine the attitude and very often the outcome of an act of judgment. A person prejudiced against tariff sees free trade arguments in nearly all statistics and in all phases of our national development. Since knowledge cannot be made purely intellectual and divorced absolutely from its emotional accompaniment, it follows that each fact arouses in us a feeling for, or a feeling against, itself. An absolutely impartial judgment in practical matters is impossible. It is obvious that our judgments are biased by our moods and caprices. When we are in one frame of mind we decide one way, when in an opposite temperamental mood we decide to the contrary without conscious concern at the inconsistency.

III. Reason

Nature of Reason.—In its thinking process the mind does not stop at the judgment which perceives relationships between general notions. The mind soon sees agreements, likenesses, basic differentia existing among the judgments it has made. That form of thought in which mind evolves relations among judgments is psychologically known as “reasoning.”

Origin of Reason.—Judgment always originates because of special needs and urgent readjustment. But after repeated use it may become habitual, a mere mechanical perception of relation. Reasoning, on the contrary, does not descend to the automatic and the mechanical. “The technical differentia in reason is the ability to deal with novel data.” Since we placed judgment above conception because of the purposeful nature of its origin, we must place reasoning even above judgment, for its chief characteristic is its power to determine new adjustments.

The Steps in Thinking.—1. *A Conflict in Experience.*—A clear knowledge of the steps in thinking is serviceable to the teacher desiring to evoke thought in pupils when attacking a new problem. The first step in thinking is the cue which starts the chain of thought. It comes, when, in the course of events, we note a conflict in experience. Thinking always starts when a problem arises naturally and challenges the mind to attempt its solution. The child who has an elementary knowledge of “predicate adjective” in grammar finds that “The flower smells sweet,” “He ground the razor sharp,” “The food tastes good,” are all considered correct, although his superficial examination prompts “sweetly,” “sharply,” and “well” respectively. The teacher places the heaviest pupil in a class in physics on one end of a board and the lightest child on the other. By placing the fulcrum at the proper point between the two the smallest pupil lifts the heaviest, contrary to expectation. The class learning the multiplication of a fraction by a fraction notes that, although the sign

× indicates “multiply,” the answer decreases, despite the fact that every problem in the past suggests the opposite result. Each one of these situations challenges the mind to attempt a solution.

2. *Recognition of a Problem.*—The second step in thought follows naturally this initial signal, this challenge to reason. It is the definite recognition of a problem. The child realizes that his knowledge of predicate adjectives needs refinement, that he is unable to explain a simple occurrence in the physical world, that he does not fully understand the nature of fractions, etc. It is this realization that a problem is calling for solution that prompts attention and effort, and indicates the point at which energy is to be applied. The self-activity is not only aroused but also directed to necessary ends.

3. *The Attempts at Solution.*—The third step finds the mind evolving possible solutions. Tentative explanations and seemingly appropriate hypotheses are applied to the problem in the hope of producing comprehension. “Are these sentences catches; do we make exceptions to the law of adverbs for certain verbs; if the adjective form is used, then the reference is to the noun, not to the action; does common sense bear out the use of the adjective form?” etc. “There must be a catch below the board that changes the balance. Why is the fulcrum not in the middle? Why is the end holding the small boy so long, while the one holding the large pupil is so short? Has the unequal size of each side anything to do with this balance?” etc. These are a few typical mental attitudes of a vast number that the mind takes in its search for solution and final explanation.

4. *Evolving the Final Explanation.*—In the fourth step observations and experiments are made to disprove one or the other of the hypotheses and find the explanation which accounts for the apparent conflict in experience. The child soon realizes that the sentences before alluded to are no “catches,” that the board referred to is not balanced by a mechanical device. Gradually, through suggestions made by

the teacher, the pupil realizes that the adjective is wanted because the noun and not the verb is modified, that the unequal lengths of the board account for the ability of the smallest child in the class to lift the heaviest. The conclusions are then formed and the correct theories are evolved.

5. *Verifying the Conclusion.*—But theory must stand the pragmatic test, hence in the final step the mind applies the conclusion, the explanation, the hypothesis to new but similar situations. It may become necessary to modify, to limit or to refine the original conclusion, as the varied experience of the future may suggest.

Conclusion for Thinking.—A cursory examination of these steps in thinking brings two important conclusions to the mind. The first reflects the fact that in all training for efficiency in thinking, the school must present problems that are real, that reflect a genuine conflict in social life. Problems that are arbitrary concoctions of teachers and textbooks are ill adapted to challenge the thought activities of the mind. The chapter dealing with interest sought to bring this idea home to the formal educators. The second conclusion emphasizes the need of regarding mind as a unit in its action. The thought activity as outlined does not differ in nature from the activity in perception, in apperception, in imagination, or in conception. All these mental activities are the result of thinking, just as thought is based upon them. It is absurd, therefore, to hold that children do not think, that thought is initiated into mental life after a mystic age, or that the dawn of reason comes at the age of about twelve to dispel the darkness that held sway until its arrival.

Forms of Reason.—The important forms of reasoning are the inductive, the deductive, and that of analogy. These are discussed fully in every elementary psychology and need not here detain us longer than merely to mention their names. We must pass on to the practical aspect of the problem.

How Can We Help the Child to Think?

I. By Emphasizing Study as Well as Teaching.—In the initial discussion of intellectual training we saw that there were three specific instructional aims to be borne in mind in teaching, viz., knowledge, power, and skill. Knowledge is termed the initial aim; it gives the facts necessary for complete adjustment. It is not placed high in the scale of educational endeavor, for it means mere taking and receiving from others. Skill is known as the economic aim, for it seeks to make one dextrous and efficient in the use of the knowledge and the power that have been attained. It conserves human energy and thus increases life's possibilities. Power is the final aim in teaching, for it strives to make us masters of the source of knowledge, to develop initiative and the ability to get our own facts. The illustrations served to impress the superiority of power over either knowledge or skill.

Will Good Instruction Develop Good Study?—These conclusions can be applied constructively if we attempt to formulate an answer to the question, "Will good methods of teaching develop good habits of study." If a child gains his knowledge from one who is gifted in the art of imparting, will he be able to study more efficiently as a result of the pedagogical procedure of the teacher?

A superficial view seems to indicate an affirmative answer. The reason is two-fold. All good teaching is inspirational. It arouses a desire on the part of the child to pursue the subject, to find additional material, and enjoy a richer possession. Good teaching can undoubtedly arouse a willingness to study and to put forth greater effort to master a subject. But we must not confuse "willingness to study" with "ability to study." While the possession of the former is a great help to the latter, it is no guarantee of greater accomplishment.

The second reason that may be urged is that the child is imitative. He will follow his teacher and learn to develop a

subject as clearly and as systematically when he studies by himself. Thus, the argument runs, in geography the pupil perceives the teacher's method of presenting the lesson, its natural sequence and development from the primary facts to the climax, and then its conclusion; he cannot fail to see the deductions in the causal series,—how the teacher knows that the rivers flow east and west, because the mountains run north and south, or how the industries are deduced from the physical map. This method of procedure the child may duplicate in his own work. From actual class-room experience the teacher knows that the child does not do so. Aside from this practical evidence we find upon closer examination that from a purely theoretical basis the answer to our question must be negative.

What is the layman's conception of a good teacher? It is evidently a person who knows his subject, presents it in an orderly fashion, traveling gradually from the simplest to the less simple, and on to the most complex principles, illustrates each new step by concrete examples taken from the child's life and experiences, explains away difficulties by showing their nature and their dependence, makes each step an outgrowth of the last, and—above all—unfolds the whole panorama in a most vivid and interesting manner. But throughout all this process what is the pupil doing? He is merely following. The teacher is the leader, the initiator. It is he who does the difficult work, he who is the pioneer and frontiersman in overcoming every obstacle. The pupil is dependent, he walks in the mental footsteps of his master, he follows in the path already blazed for him. But in study the scholar must be his own leader; he must be the initiator. Each succeeding difficulty is a new battle for him to win, for each perplexity solved is a victory whose glory redounds to his credit. Will a good follower make a good leader? Can it be argued that the child who can follow a good teacher will be able to study well when left alone? Will the good soldier necessarily be a good general, will a good subordinate inevitably become a good executive? The two activities,

teaching and studying, are direct opposites; in the one the pupil is mentally dependent, he is mentally pauperized and is, in that measure, robbed of mental strength and courage. In the other, study, he is thrown on his own resources and as a result soon gains in force and power.

The question, "Which is more important, teaching or study?" is already answered. From the foregoing we see that in teaching, the pupil is the passive recipient of knowledge, arranged, systematized, codified, essential and salient features selected, the whole well interrelated. He receives his knowledge in the predigested, tablet form. But in study the child is active; he must find his facts, weigh them, choose the important ones, arrange and classify the data himself. He depends on his own ability. His own activity carries him through. Study is dynamic and gives power to find new material. Teaching, from the pupil's standpoint, is static, and at best presents old material. Class-room instruction is hardly complete and certainly relatively unimportant unless we constantly emphasize proper methods of study as well as proper methods of teaching, and thus endeavor to serve the highest of the three aims of teaching, acquisition of power, as well as of knowledge and skill.

Children Lack Ability to Study.—High school teachers are constantly complaining that the children sent to them by the elementary schools "can't think, can't study, do not know how to use a text-book, how to get out of it the rich storehouse of facts without being shown what to study, what merely to read, what to omit." They blame the elementary school teacher for making knowledge "too easy" and for indulging in "soft pedagogy." While the last accusation is unjust, it is, however, true that our children are overtaught and "understudied"; that is why so many of them cannot get along in the high school, where more study is necessary and less teaching is done. To neglect to teach children how to study is almost equivalent to failing in one of the primary functions of elementary education, for if there is any one goal which we must set before us in our school work

it is to make independent, self-directing individuals. In the post-school days all knowledge must be gained by one's self through books. To neglect the proper use of the text-book is therefore to neglect to give the child a mastery of the great sources of knowledge, to deny him the most important means of self-education. A very vital question which we ask at this point is, "How shall we teach the child to study?"

Children's Difficulties in Study.—Before suggesting a method of meeting the problem just outlined, it is essential that we realize that study is an exceedingly difficult process for the untrained mind. The causes of this difficulty will readily show the teacher what obstacles must be overcome in making the child an active rather than a passive student. The process of study finds the child almost helpless for a variety of reasons, chief among which we must name the following:

(a) As a learning process study is entirely new. McMurry defines study as "The vigorous application of the mind to a subject for the satisfaction of a felt need." Here we have a process that makes the child the initiator, that proceeds from a specific motive, and that can be achieved only through the child's own aggressiveness.

(b) In addition to the "personal application" there must be a "personal reaction" in all study. The student must ask and answer satisfactorily such questions as "Do I understand?" "Do I need this fact?" "Do I know it?" "Do I agree with it?" "Does my other knowledge bear this out?" A cursory examination of these questions indicates, at once, the inherent difficulties in studying.

(c) Children are not successful in their attempts to study because they lack self-assertiveness in academic matters. Their failure to ask questions and their backwardness in stating a disagreement are evidence of their lack in this respect.

(d) Subservience to authority is another attitude that undermines efficient study. The word of teacher or book is never questioned by children. "Ipse dixit" is, too often, the all-sufficient reason. The child must not only overcome

this mental attitude but must also develop a new one that makes for a critical spirit rather than one of docility.

(e) The child's scattered interests, shifting and fleeting attention, and lack of concentration serve to add to the burden of study. This is intensified when we consider that study is a process that is inherently neither interesting nor attractive to the noisy, active, capricious physical natures of boys and girls.

(f) Limited knowledge of the subject and lack of ability to read with intelligence and discrimination are two additional factors that make study loom up as a colossal task with insurmountable difficulties. To these we might add numerous others, if space permitted; but we have seen enough of the problem to realize the difficulties that confront the children and the patience with which the problem, "How to Study," must be approached and solved.

Teaching Children How to Study. The Organization of the Study Period.—The average course of study in our country makes mandatory a study period of about thirty minutes each day. This is too often regarded as a period of relaxation and relief by both teacher and pupils, and is therefore assigned for the last half hour of the afternoon. A proper study hour means vigorous application and concentration, a period which calls for the best effort from teacher as well as pupils. What shall be the conduct of this period? Let us formulate our answer in the concrete, taking for illustration, a history lesson, "The Stamp Act." First, assign a definite lesson, which is to occupy the entire period, by topics and subtopics, rather than by pages. When children are asked, "What is your history lesson for to-day?" the answer often is "pages 57 to 60." The more rational method of assigning a lesson is to announce that the Stamp Act is to be studied under the following topics: A. The meaning of the Act; B. Why Passed; C. Reception in America; D. Repeal and Influence. This mode of assignment gives the children an idea of how to classify their facts, makes the work definite and emphasizes the basic principles,

not the accidental pages. To assign "pages 57 to 60" seems to indicate to a child "study all that you find there"; to assign by topics and headings shows him definitely what is expected of him. These headings not only give the pupils useful centers for grouping but serve to teach them organization of facts.

"How shall the child begin to study?" This is the next problem. Since the child does not know the art of study, the early study periods must be devoted to teaching the steps in studying. The children must be taught that in studying they should first read a paragraph for the general comprehension and then extract from it its important contributions. This latter step is the most difficult for the children to grasp. To them studying is equivalent to memorizing. Ask children to define study; their answers show that in their minds they have studied when they can repeat the author's text verbatim. They fail to realize that the art of study is often the art of omission. How can we bring home to their minds the absurdity of memorizing? Merely to forbid this is as foolish as it is useless. The best method is to show them how false the notion is through a method of "reductio ad absurdum." Select the same topic in two good histories and carefully analyze each with the class. Put the component ideas of each on the blackboard and then compare. The topic happens to be the "Stamp Act." We show the children that in some points these two authors agree, both give the definition of the act, when it was passed, its object, but the first adds that Grenville was the minister, the second omits this fact but observes that Franklin happened to be in England at the time. Through a question or two we can make plain to the children that, although these unimportant details differ in the two books, both authors agree on the important points and vary only in the minor details. Children can be made to see that, if study means to learn everything by heart, then to really study the history they ought to memorize both books; that being so, why not a third? In a few minutes they reach the conclusion that only the impor-

tant ideas are to be learned. "What constitutes an important and an unimportant idea?" now becomes the pivotal problem for proper study. Weeks and weeks of practice in analyzing paragraphs in the history, in the geography, in readers, in magazines, and deciding which sentence is important and which is unimportant, are needed with a class that has not been taught to study. Children gradually acquire the teacher's point of view, learn by imitation, at first, what is necessary and what may be eliminated.

When the children have attained some degree of skill and efficiency in differentiating essentials from non-essentials, we can proceed. They are now taught that those ideas that are judged important are to be learned in their proper sequence. That done, they proceed to the succeeding paragraphs and in the same way each is read for comprehension, analyzed for its important contributions, which are in turn memorized. When the end of the lesson is reached the child should be taught how to prepare a topical outline of the essentials of each paragraph. This outline is either written out or merely visualized.

This is an outline of the process of study as far as the child can carry it out. Elementary school teachers will find that it takes conscientious work and untold effort of a whole term, at least, to develop in the children a little efficiency in studying. When we recall the difficulties that confront children in studying, this effort seems reasonable. Many educators hold that a student has not studied until he has questioned the text and has taken the attitude of critic as well as of passive learner. This requisite may be added in teaching advanced students the art of study. How may college sophomores and juniors read history, psychology, economics or literary criticism with such an attitude? How many of them are capable of such intellectual aggressiveness and of intelligent critical analysis of a text too often regarded as sacred? When we have answered these questions in the light of actual experience we shall readily see that this modified and simplified form of study is the maximum that can be

expected of elementary school children. Study as a selective and critical activity must be reserved for students of secondary and collegiate grade.

Assuming that the children of the class have learned this form of study and have developed an elementary proficiency in the process, what shall be done in the study period after the proper assignment of the lesson by topics and subtopics? The next step in the conduct of the study hour is to assign the first subtopic for a limited time of about six or seven minutes. To assign study work for the entire period usually leads to waste of time and diffusion of effort. Concentration for thirty minutes is impossible for children; restlessness and inattention ensue. They have no conception of time; a half hour may be a very long time or a few moments. When the whole assignment is given at the beginning of the period, they either spend all the time on the first half of the topic or, in the rush to reach the end, they merely glance at the earlier subtopics only to have many minutes of idleness at the end. To insure concentrated effort a subtopic should be assigned for the limited time that was suggested.

With children who are just beginning to master the process it is well to put study questions on the blackboard as a guide in differentiating the important from the unimportant. A paragraph in one of the common school geographies treats of the Gulf States, their leading product, the chief cotton markets, New Orleans and Mobile. The questions on the board may read:

What is the leading product?

What is its largest market?

What is its second market?

Why does the first excel the second?

To study the paragraph assigned, means to find the answers to these four questions. But as progress is made in the study process this practice of giving study questions must be discontinued, for it does for the children precisely what we want them to do for themselves. It is well to organize these questions as those above; of the four questions three are

based directly on the text, while the answer to the fourth is only hinted at in the original paragraph. To give both types of questions helps to make the study hour a thought period. Set the children to work, then, for a *limited time* on a *limited assignment*.

When the few minutes assigned for the first subtopic have elapsed, the class should come to attention as different children give what they judged to be the essentials. A child's answer should be criticised by his class-mates; they should suggest what was omitted but ought to be inserted, what was included but could well be neglected; in each case the reason must be given. As each idea is accepted it is placed on the blackboard, and at the end the teacher emphasizes that, although the assigned paragraph contains seven ideas, only three or four have been accepted. It may be well to have the children jot down their answers on slips of paper; when the final answer is developed they compare it with their own and make the necessary changes.

When the first partial assignment is thus completed the next paragraph or subtopic is treated in exactly the same way. The children are thus made accountable for each minute's work. But care must be taken to review the first paragraph at the end of the second, the first and the second at the end of the third, and so on to the end, otherwise the children lose the thread of the development, the unity of the lesson, and regard each paragraph as an independent, isolated entity, rather than an integral part of the whole topic.

The subject of each day's study period should change from history to geography, arithmetic, grammar, spelling, etc., so that the children learn to apply the method to each of them. It is obvious that as the subject changes the method of study and the sequence of steps will change also. But the general principles and the leading characteristics of the lesson as outlined can be applied to any study situation. A few illustrations may make this contention clear. The day's lesson in grammar taught the children singular

and plural in nouns and pronouns. When they understand "number," can distinguish one from the other, and can change the verb as the subject changes from singular to plural, the teacher's teaching work is over. The rules for forming plurals of words ending in "y," in "f," in "o," the consideration of irregular nouns of the type of "sheep," "scissors," "radius," etc., treated in a page or two in the text-book, should be made the subject of the study period for the afternoon. In spelling, a teacher may assign a list of words like "value, read, conceive, change, pay, believe, allow, remove, note," etc. The children are told to add "able" to each, then verify the spelling by searching for each in the dictionary and finally formulate a rule of spelling as a result of the changes found to be necessary. The subject of "Longitude and Time" comes late in the course in arithmetic. On the day preceding the teaching of this topic the study period can well be occupied by a review of latitude and longitude as treated in the geography; the page or two containing the information should be studied by the method outlined.

But under no consideration should the study period be turned into a general "coaching lesson." Conscientious teachers often make it a practice to reteach in the study period a particular lesson that was difficult and therefore was not grasped by the children. With due appreciation of this effort, such practices must nevertheless be condemned. In the study period we must try to make the child an independent discoverer of facts. Class coaching intensifies the feeling of dependence and thus frustrates the aim of study. All reteaching must therefore be postponed for the next teaching period.

The function of every study period should be five-fold: (a) to lead a child to acquire facts by himself; (b) to develop a spirit of self-reliance, to make the pupil independent of the teacher; (c) to train in the ability to concentrate, to apply one's self to a given task in a given time; (d) to develop the ability to extract the thought from a printed page;

to train the eye to find meaning in a mass of written words as the ear does with the auditory symbols; (e) to so marshal facts, to so select ideas, that the underlying principles stand out in relief, while the minor and insignificant data are properly subordinated. The objects of the study period are such as seek to give each child a mastery of those devices which lead to self-culture, to develop power so that the pupil can obtain for himself the heritage of knowledge that the race has bequeathed to him.

II. Avoid Injudicious Use of the Type Form in Teaching.

—The curriculum abounds with opportunities for exercising the reasoning activities; the school subjects afford plenty of conditions and circumstances in which the child must think, but in our teaching we often reduce the rational to the mechanical, the thoughtful to the automatic, by misusing the type form. The most serious offenses are found in arithmetic and grammar. A few class-room practices may serve as illustrations. A teacher taught the area of a rectangle. Example after example was given, showing a varied wording, but in all of them the type form was followed very faithfully. The first example asked for the area of a floor 20 x 12 ft., the second, of a wall 24 x 8 ft., the third, of a hallway 50 x 6 ft., the fourth, of a street 300 x 30 ft., etc. In each case the conditions were exactly the same. The floor was changed to a wall, a ceiling, a hallway, or a street, but the child mechanically multiplied the two numbers and paid absolutely no attention to the accidental changes of place. There was no thought in the work for there was no need of a rational endeavor to read the example, find what was wanted and decide on a line of work which would lead to the desired goal. Mechanically, the two figures announced by the teacher were multiplied and a mechanical result was obtained. Such are the inevitable results when the type is given undue emphasis.

Just as soon as the children have grasped the idea, change the type by introducing as much variety as possible. The succeeding examples should have read: "A

floor is 30 ft. wide, its perimeter is 150 ft.; find its area." Here the impulse is to multiply 30×150 , but the child soon sees that conditions are different, and accordingly the solution must vary. The next example should have called for the area of a hallway whose length is 50 ft. and whose width is $\frac{1}{2}$ of its length; another should have required the area of a field whose length is 60 rods, but whose length and width are 110 rods, or of a field twice as long as it is wide, measuring 40 rods in width, etc. The child must be made to feel that each of the examples presents a new set of conditions, that, although they are all about area, a line of work must be determined upon in each case. Follow the type and you reduce arithmetic to a dull, routine, imitative subject. Vary the type, or avoid it after the initial drill, and at every point the subject presents need for reasoning. The reason so many of our classes literally "go to pieces in arithmetic" when a stranger questions them, is precisely the point under discussion,—an injudicious use of the type after the underlying principle has been grasped.

The same caution is necessary in grammar. How many children always alight on the first noun and announce "subject," the middle of the sentence, "predicate," and the end, "object or predicate complement." The cause of this practice of analyzing by position rather than by thought is not hard to find. The type sentence has been used in which the parts follow in traditional order; the sentences all ran: "Columbus discovered America," "The bird flew over the housetops," "The Confederates seceded from the Union," etc. After the initial drill no two sentences should be alike in construction. If the first reads "The birds flew over the housetops," the second should be "Over the field, the army marched," the third "Across bogs and fenlands ran the cowardly army," etc. Undue emphasis upon the type in grammar as in arithmetic turns a rational subject into a mechanical one.

What Are the Legitimate Uses of the Type?—What then are the legitimate uses of a type? In the main they are

three. The first occurs in all teaching where imitation is desired. In language work, for example, where correct speech is taught through imitation of models, the type sentence or form is very helpful. The drill lesson is a second teaching situation that makes the type form valuable. In teaching a new case in arithmetic, a new element in grammar, or a new principle in composition the type forms should be used throughout the introductory lessons after the new point has been grasped. Thorough mastery of the new presentation is thus assured. A third legitimate use of the type is found in subjects where it is essential to give a bird's eye view of the whole through a series of well-selected observational points. Thus, in teaching the cities of a new country, it was suggested to give, in detail, a picture of one of them. Let this be a type for all other cities in that country. If geography studies man and his life in the physical environment, then a detailed knowledge of industries is absolutely essential. But since we cannot teach each industry intensively we select a number of typical ones. Coal mining is studied as a type of all mining industries, lumbering as a type of forest industry, cotton growing as a type of large plantation industry, etc., etc. To be sure, copper mining differs from coal mining, wheat raising from cotton growing, but there is enough in common to enable us to regard each one of these as a type of its kind of industry. A type was defined in our previous discussion, as a concrete individual thing or process representing a whole class. When we are seeking a short cut across the inductive field, a model for imitation, a medium for drill, the type has its judicious use. But when reason is to be emphasized it militates against the primary aim of the lesson.


III. The Use of Socratic Questioning.—Children often carry away notions and impressions that are erroneous and exceedingly stupid. Merely calling attention to the misconception or trying to explain it away does not always suffice, for the mind may take a stubborn attitude. An effective plan is to subject the child to a series of questions of the


Socratic form, which reduces the child's misconception to an evident absurdity, and thus convinces him of his error.

The general criticism urged against the Socratic form is that it is altogether too destructive. It breaks down the misconception by showing its limitations or its absurdity, but little of a constructive nature is offered; nothing is done toward establishing a clear, definite conception of the correct idea. It forces the mind to think along a negative rather than a positive line.

This criticism is not always pertinent. In applying it to class-room use the questions can be so framed and ordered that the pupils are led to one inevitable conclusion,—the correct one. Thus a child tells us that "claim" is synonymous with "demand." Through a series of Socratic questions he can be made to realize his misconception and finally infer the correct meaning. The child is asked the following questions: The robber claimed my money. Is that correct? The robber demanded my money. Is that correct? The colonists claimed the right to vote. Is that correct? I claimed the watch I lost. Is that correct? The pickpocket claimed my watch. Is that correct? The pickpocket demanded my watch. Is that correct? Does "claim" mean the same as "demand"? But is "claim" a kind of "demand"? What kind of a "demand"? The answer, "a rightful demand," is readily obtained.

A teacher, reviewing the rectangle, called for its definition. The first pupil offered "A figure with four sides." The teacher passed from child to child, each one repeating the same incorrect definition. The teacher, helpless in this situation, administered the usual scolding and was about to give the correct answer when the principal took the class. Recourse to the Socratic method set the pupils thinking and soon elicited the proper definition. He placed a distorted

four-sided figure on the board, thus: , and asked, "Is this a rectangle?" The negative answer was almost general,

and the reason assigned was, "the sides are not parallel." A second figure was then placed on the board, reflecting their suggestion,  "Is this a rectangle?" All

agreed on the negative answer. The principal then said, "All the sides are parallel, what is the trouble?" Most of the pupils volunteered, "the angles must be right angles." The definition, "A four-sided figure with four right angles," was easily obtained. The Socratic method was most decidedly destructive in both these incidents, but it was not devoid of its positive influence, for it led the children to an inevitable conclusion, the correct one, evolved by themselves, because their reasoning power was stirred and directed.

IV. Place the Child Upon Its Own Resources When Possible. Make the Child Take the Initiative in a Situation Requiring Thought.—Various practices and habits of class management adopted by the teacher tend to encourage the thought activity on the part of the children. As far as possible the child should be thrown on his own resources and should be placed in situations where he must work out his own salvation when he is called upon for his conclusion. Let us consider some individual illustrations.

In a previous connection we had occasion to refer to the irrelevant answers which children give to questions. All answers which are not pertinent to the question should not be rejected offhand, but should be turned over to the class and the other pupils should be asked to judge the relevancy of the answer given. Let them review the question asked and decide whether the answer has anything at all to do with it. This makes the children wary of saying the first thing that comes into their heads; it makes them test their answers and try to see a logical connection between question and answer. The first week or two of this practice will show little improvement, but a continuation of it will bring results, for the children are on their guard and become critical of their answers.

This practice of having children judge the relevancy of

their classmates' answers can be carried even further in class work. Children should be made to feel that at all times they are liable to be called upon to criticise the work of a classmate. Thus, if one child recites his geography or history, every other pupil should be ready to point out the errors made. In reading, this is especially helpful. It is a common experience to find children inattentive to class reading. Their interest in the content prompts them to read faster than the pace set by the teacher. To insure attention to the text, teachers resort to devices like requiring children to wait for the signal to turn pages, and the like. Even such practices are not altogether successful. Many disciplinary cases can be avoided if, as each child finishes his oral reading, we call upon the rest of the children in some promiscuous order to criticise the work just completed. We must be sure to be extremely severe with those who, for the sake of answering, invent errors which were not made. We must also follow up those children who fail to detect the errors. Children are thus kept alive and alert to all that is going on, judging the correctness or incorrectness of what is being said, and are ready with a conclusion when called upon.

A common form of correcting compositions is to have one child read his composition to the others in the class, and then receive their criticism and correction. This exercise is worth while, but we usually do not take full advantage of the opportunity it offers. The child criticised must be given a chance to defend itself. Excellent results are often obtained from such a practice. We find out how much of the child's work is accidental, and to what extent it is the result of deliberation and judgment. The following is a typical case that may be cited for illustrative purposes: A girl read her business letter applying for a position. It began, "I herewith apply for the position of," etc. One of her neighbors objected because "it was too sudden." She wanted the formal beginning like, "While reading the 'New York World,' I chanced to see your advertisement," etc. The child criticised refused to accept the correction on the ground

that "a business letter should come to the point in as few words as possible." The controversy was then submitted to the teacher, but not until a fair criticism had been obtained from the class and an exceedingly wise defense provoked from the author of the letter.

How stupid a manual training lesson often becomes when we crush the reason element out of it in order to obtain perfect results through the elimination of all possibility of error! It is a common practice in the construction of any useful object, e. g., a card case, to give out material for that part of it which can be completed within the period. The children follow faithfully such directions as "measure x inches down, y up, draw a horizontal line, bisect it, cut along the dotted line," etc. In the next lesson another part of the work is given out, the teacher dictates the measurements in the same way, and the children follow out her directions. At the end of the fifth or sixth lesson all the parts are given out, put together and pasted, and the child realizes that, through all these meaningless periods, he has been constructing a card case. Such work is based on blind, stupid following, spiritless imitation, without a gleam of intelligence. As an exercise in obedience it may possibly be tolerated.

Although the lesson is manual, there are plenty of opportunities for reason and judgment. In the very beginning the children must be shown the completed article; this is then separated into its most convenient parts, and suggestions as to what to make first, how to measure, where to cut for most economical use of material, should be obtained from the children. After the procedure for a particular part of the object has been decided upon, the teacher actually carries out the directions, using a certain set of measurements. That done, the children are set to work with new dimensions, so that the work shows originality, personal judgment, and is always more than a mere copy. In such a lesson the mistakes are often most helpful for future independent construction.

We can go on through the whole series of school subjects

in the same manner. They abound with opportunities for the use of good, sound, practical judgment and reason. Thinking is not a single faculty or a uniform process; it is the sum total of our methods of interpreting, judging, comparing, contrasting, inferring, concluding, etc. The student who agrees with this conception of thinking must realize the absurdity of the traditional stand that some subjects like arithmetic and grammar have a "predestined fitness" to develop thought. "Any subject from Greek to cooking and from drawing to mathematics is intellectual, if intellectual at all, not in its fixed structure, but in its function—in its power to start and direct significant inquiry and reflection. What geometry does for one, the manipulation of laboratory apparatus, the mastery of musical composition, or the conduct of a business affair may do for another." Teachers must, in all situations possible, endeavor to change the dull mechanics of class management to a system which makes each child an initiator, a thinker, a self-directing being loth to accept that kind of authority which stifles personality.

SUGGESTED READING

- ANGELL. *Psychology*, Chaps. 11 and 12.
BAGLEY. *Educative Process*, Chaps. 8, 19, 20 and 21.
DEWEY. *How We Think*.
EABHART. *Systematic Study in the Elementary Schools*.
HORNE. *Psychological Principles of Education*, Chaps. 13 and 14.
JAMES. *Psychology (Briefer Course)*, Chap. 22.
MCMURRY. *How to Study*.
SCHAEFFER. *Thinking and Learning How to Think*, Chaps. 1 and 8.
SULLY. *The Teacher's Handbook of Psychology*, Chaps. 14 and 15.
THEORNDIKE. *Principles of Teaching*, Chap. 10.

CHAPTER XXI

FORMAL DISCIPLINE: DOES SPECIAL TRAINING INFLUENCE GENERAL ABILITY?

The Problem.—In the introduction to intellectual training it was noted that there are two general instructional aims, viz., (1) the utilitarian, the practical aim in teaching, which seeks to give the information necessary for complete life and better judgment, and (2) the disciplinary aim, which endeavors to give such a training to the mind during the process of acquisition that it will develop in power as well as in knowledge. The disciplinary value of studies gives that mental fiber which ultimately enables the individual to gain knowledge and make for himself the necessary adjustments of future life. Disciplinary values sum up the permanent effects upon mind and character. The importance of this disciplinary phase of instruction is obvious even to the lay mind; the practical teacher, however, asks, "To what extent will the power gained in any one experience be utilized in other situations for other purposes?"

The Doctrine Stated.—The doctrine of formal discipline offers an answer. It holds that mental strength developed in one set of experiences can be used in all other kinds of experiences; power developed in one subject is transferable to any other; reason gained in grammar and arithmetic is available in those later situations in life where reason is necessary; imagination developed in literature and in history will serve in good stead in any situation where imagination must be used. The formal disciplinists conceive the mind as a sort of reservoir. Whatever power results from the exercise gained in any subject flows into the mind as

so much force and is held there in reserve. This force is drained off when the occasion for its need arises.

Origin of the Doctrine.—How did educators come to this conclusion? The doctrine is prompted by our conception of the mind's mode of action in an intellectual state. The answer has led to the formulation of two distinct schools of psychologists, the faculty psychologists as opposed to functional psychologists. Let us consider their rival positions.

The faculty psychologists hold that the mind has separate capabilities for each of its varied activities. It has a faculty for reasoning, another for imagination, another for memory, etc. Train any one faculty in one experience and it becomes stronger for all purposes; develop the reasoning faculty in geometry and the power for reasoning is strengthened for all things in the same measure.

The functional psychologists assert that the mind is one integrated unit and cannot be separated into component faculties in any mental activity. In any experience the mind as a whole adjusts itself. What appear to be faculties are only modes of mental functioning. Any mental reaction that is manifested is not a reaction of a faculty but of the whole mind, of all its powers and capabilities. Reason, imagination, perception—these are special forms in which the mind acts. But since experiences are not alike in kind, in intensity, or in nature, the adjustment in one phase of life will not help in another unless the two phases are similar. The mental adjustment required in reasoning out the intricacies of differential calculus will not in any way insure better reasoning in matters of taxation, of diplomacy, or of law.

Cooley suggests that a concrete illustration of the differences between faculty and functional psychology is offered by the electric carriage-call device installed in all the leading theaters. Under the old system the sign contained all the numbers from 0 to 9 inclusive. If 356 were wanted the electrician lighted the 3, the 5, and the 6. The modern machine has not ten separate numbers, but a single intricate design, which can make any combination, depending upon

which switch is set. According to the faculty psychologist the mind has separate independent powers, it is hence like the old machine; according to the functional psychologist it is one involved machine and can give any combination desired.

Prevalence of Formal Discipline in Educational Thought.—

It is evident that the faculty conception of mental action explains the origin of the doctrine of formal discipline. The popularity of this doctrine is manifested in its prevalence among eminent educators; the typical attitude toward formal discipline is reflected in the following citation from Woodrow Wilson. In answer to his own question, "Why go to College?" he says, "The mind takes fiber, facility, strength, adaptability, certainty of touch from handling mathematics, Latin, Greek, etc., etc. The college should give elasticity of faculty and breadth of vision, so that they (the students) should have a surplus of mind to expend." Here we have a clear statement of formal discipline drawing upon faculty psychology for its support. Thorndike, in his "Educational Psychology," points out that President Wilson's conception of the mind is that of a machine, with its different faculties as different parts of the machine. Training is the lubricant which makes these parts work more efficiently in turning out its future products. "The mind is regarded as a storage battery which can be loaded with will power, judgment, or reasoning, and thus give the individual a surplus of mind to expend."

Critical Examination of the Doctrine.—This doctrine of formal discipline leads logically to the conclusion that the school should so organize its curriculum that each faculty will have its training guaranteed by some subject. In this way a perfect mind can be developed, with capabilities for perception, judgment, and reason in all possible situations which may confront the individual. These formalists are not at all concerned with introducing into the school and its activities the situations of actual life. Why should they? Are they not developing all the mental powers of the

child? Will the pupil not be able to use them in any situation?

The formal disciplinists often seek additional justification for their stand in physical analogies. They argue, "Exercise in the smith's shop, in the gymnasium, builds muscle and adds strength. Can I not use this strength in a new situation? Can I not endure more strain, lift more, pull harder? The same law applies to the mind." A comparison of physical and mental action reveals conditions so different that it is dangerous to argue that what will happen in the one case will hold true in the other. Besides, the analogy is false. Can the smith use his arms in rowing? Will the strong farm youth make a better candidate for the crew than the average gymnast or athlete of less strength? Does not the smith tire more easily at the oar than the average student who exercises moderately? The good oarsman would not make a remarkable hod carrier; the strength of the pugilist would not help him lift a piano; the physical power of the safe mover does not make him the equal of the athlete in hammer throwing. The reason is obvious. In going through a particular action all the muscles, nerves, and nerve centers coöperate in a definite way. The oftener the action is repeated the firmer is this coördination established. In trying a new adjustment the individual must go through a double process. He must first break up the old coördination and then establish a new one. Physical force developed in one activity is not only no guarantee of success in other physical achievements, but may even be a decided hindrance.

The very same observations and conclusions may be applied to mental activity. Thought in one subject is not thought in another. The nerve and brain-cell action for one kind of reaction in one subject is not the nerve and brain-cell reaction in another. Hence the chemist and the physicist, keen observers in their respective experiments, will not show sharp and well-developed powers of observation in finding a bird in a tree, nor in singling out a daisy in a field of clover. Why does the ready reasoner in calculus,

or in applied mechanics often cut so pitiable a figure in reasoning matters of a political nature? We are marvelously sharp in the dark nooks of one subject and yet blind as owls in the sunlight of another one.

Experimental Evidence.—The limitations of the doctrine of formal discipline are reflected in the results of varied experimentation. It was found that, after practice was given in judging the length of short lines and efficiency developed in discriminating short sizes, the same individuals showed their former bad judgment when long lines were used. Children whose teacher gave special attention to arrangement and to neatness of arithmetic papers produced better papers in this subject only; they showed a slight improvement in the written work of other subjects, but the progress in general neatness was not commensurate with that made in arithmetic papers; but, as far as personal appearance or tidiness of desk is concerned, they were absolutely uninfluenced. Children drilled in judging lengths accurately showed no improvement in judging weights. Although grammar and arithmetic both require reasoning in abstract relationship, nevertheless, monthly ratings given by teachers show that there is a number of children in every class who do excellent work in grammar, but who are almost helpless in arithmetic, and vice versa; that many who are exceptionally bright in number work are far below grade in grammar. It is the traditional boast of logic that it improves the mind's ability to reason. Students who have studied logic have yet to find how it has improved their reasoning power. It has helped them attack the formal side of a proposition, classify it, and subject it to a few mechanical laws; but logic has never aided any one "to see straight into the heart of man or nature." Logic has never enriched content. No one employed the rules of logic more assiduously than the mediæval scholars. Their whole philosophy is perfect logic, but its content is often stupid and meaningless. Logic was a hindrance rather than a help, for it kept them from studying nature and the laws and habits of life. Thus we see that formal discipline must

undergo marked modifications before it can be accepted as sound educational theory.

Modern Conception of the Doctrine.—The modern statement of the doctrine which is accepted almost universally may be given in the words of Thorndike, "One function aids any other only in so far as the two functions have as factors identical elements." Horne gives us an identical law, "The mental powers developed in any one subject are applicable to any other in direct proportion to their similarity." A pupil proficient in arithmetic will find algebra and geometry simple subjects; a student ranking high in German takes more readily to another foreign language, but not necessarily to science. A student showing ability in physics will take to mechanics, chemistry, astronomy, but there is no guarantee that he can transfer his gift to the languages or to the social sciences of education, economics, or sociology. Efficiency gained in one branch of knowledge can be transferred to another only when the two are similar; the greater the similarity, the easier is the transfer from the one to the other.

This similarity among subjects which determines the ability to use in one set of experiences the power gained in another can be traced along three lines: (1) The similarity may be one of subject-matter. The numerous illustrations that have been cited in the preceding topic are examples of approximating identity of subject-matter.

(2) The similarity may be one of procedure. Chemistry differs much from physics and both differ from zoölogy, yet the student who has a training in the laboratory method followed in his studies in physics is better equipped to pursue investigation in the biological or chemical laboratory. History differs from geography, but the child who has been taught to study the textbook and the maps in the latter can study the former more readily because of the similarity of procedure.

(3) Another similarity among subjects may be found in their aims. This similarity very often facilitates the trans-

fer to one subject of ability gained in the other. An illustration of similarity of aim is found in two subjects that appeal to the æsthetic sentiments. The child who likes to draw can be interested in the beauty of the flower, the bird, the butterfly. It does not follow that he will master the facts of natural history, but the æsthetic sense manifested in the drawing makes him eager for these subjects. Experimentation of the kind that was cited previously in this chapter shows that the aim, "neatness in written work," can be transferred readily, although the improvement in all written papers is not as great as in the one specially emphasized by the teacher. Children who are taught self-reliance and self-management in discipline are backward about asking their teachers for aid in other matters; they do not necessarily work their examples more speedily or accurately, but the desire to do the task alone and not call for assistance is prompted by the general aim, "self-reliance," implanted in other relations.

When, therefore, there is a similarity of subject-matter, of mode of procedure, or of final aim of any two subjects, ability developed in the one will be transferable to the other in direct proportion to their likeness.

Conclusions for Education.—The doctrine of formal discipline coming at the end of our study of the intellectual development has certain definite lessons for the teacher. To these we must now turn.

1. *Special Training, Instead of Aiding General Ability, May Injure It.*—It was shown that proficiency developed by special training does not promote a general ability. Prolonged study in any particular field causes the individual to fall into a rut. He becomes more accomplished in his specialty, but narrower in his general outlook. Everything in his life is interpreted in terms of his specialty. To the mathematician life becomes a continuous equation, to the scientist a subject for concrete analysis, to the philosopher a matter for infinite speculation. This leads to one-sidedness, which is little more than a form of arrested development.

The proverbial absent-minded, thoroughly unworldly professor has not received an education which adjusts for complete living, and which finds joy in all of life's activities.

2. *An Ideal is Generalized.*—We must, nevertheless, admit that specialization in one field gives a mode of attack and approach in many of life's problems. The student who develops habits of close study in mathematics or languages finds it easier to concentrate on his economics even though he may not have an added ability for its comprehension. The logician who begins an argument makes sure that the terms are well defined; the lawyer that the proposition has the elements of constitutionality; the economist that the laws of production, distribution, etc., are not violated. Thus the person who has learned to observe in botany comes to chemistry with the feeling, "I must keep my eyes open if I want to learn." His observations in the new subject may be poor, his training in observing the flowers, the trees, the birds in nature may not stand him in good stead, but the attitude toward the work, the ideal, is generalized. So, too, in matters of discipline: obedience and proper conduct in the school will be no guarantee of similar behavior at home. If the discipline is based on reason, if it is seen in the light of a necessary social requirement, the child carries over the discipline of the school to the home, and vice versa. He sees that coming late to class means interference with everybody's work, coming late to table is bad conduct, for here, too, he disturbs the other members of his family. The ideal, "I must not disobey, I must be punctual," is easily transferred in the proper kind of discipline. But if the child obeys from a sense of blind duty or from fear of authority no such ideal can be generalized. This observation points to a very important conclusion for educational endeavor, viz., the ideal must always be made conscious, otherwise it cannot be generalized for every experience. While specific training, therefore, gained in one subject cannot be transferred to all other subjects, especially those of a different nature, a certain attitude is acquired which can be applied in new cases.

The student may ask, at this point, "Why is an ideal generalized?" The answer we find in the following simple analysis: Since the brain, in its neurosis, and the mind, in its psychosis, act as a whole, certain adjustments that they make in any one subject may prove absolutely essential in a second subject, the nature and mental activity of which may, nevertheless, be different from the first. Thus, in arithmetic, we require concentration, will-power, close reasoning, curbing of the stream of consciousness. But to do effective work in grammar, different as this subject is, these same requisites must be assured, hence the student who can use these powers and has had them developed in arithmetic will very likely be able to give to grammar concentrated and continued thought, an element which guarantees partial success in the new subject despite its dissimilarity. Hence, in this instance, the ideal, concentration, acquired in specific training, has been generalized and is used in another connection. It is safe to suppose that practical conditions in later life that need attention and close concentration for their solution will find the individual better fitted to adapt himself, because in his school training he has generalized the necessary ideal, the necessary attitude toward work, "concentration." This accounts for James' counsel already quoted, "Do every day or two something, for no other reason than its difficulty, so that when the hour of dire need draws nigh, it may not find you unnerved and untrained."

3. *The School Curriculum Must Be Broad and Liberal.*—Since the general conclusions are, first, that efficiency in one subject does not guarantee an equal efficiency in another demanding the same mental activity; and, second, that such ability can be transferred only in proportion to the similarities of the subjects themselves, it follows that to reflect the much varied mental life necessary in the outside world the school must incorporate as many kinds of reasoning and imaginative subjects as are necessary to reflect the needs of practical life. The greater the variety of mental activity in the

curriculum, the closer do we approximate the variety of mental activity in the practical world.

4. *A Plea For the Utilitarian in Education.*—A fourth conclusion which elaborates the preceding one makes it imperative upon the curriculum to emphasize the utilitarian as well as the cultural aspects of the school subjects and thus reproduce conditions and reactions essential for adjustment in later life. Mental life in the formal school subjects is not the mental life usually demanded by the real world of practical problems. It is therefore obvious that science and nature study should have a fixed place in the curriculum. Manual training, with its shops in wood, iron, and metal work, should be embodied in the course of study without an apology. Less reasoning in the "hare-and-hound problems" of arithmetic and more in civics, politics, history, geography; less hair-splitting in technical grammar and more drill and practice in composition and in literary interpretation; less aimless and abstract work in hypothetical examples in the physical sciences and more in the practical application of these, and the actual study of appliances in the environment would make education less formal but more useful, less disciplinary but none the less cultural.

Education has been saturated too long with the erroneous principle that it must not defile itself with what is utilitarian. The living present, the actual conditions in which the pupil lives, have therefore been neglected. The dead past and unapplied theoretical knowledge were made the subject of study for the living. Teachers and parents are beginning to grow sceptical about the far-reaching influences of the disciplinary values of the curriculum. There is a growing demand for subject-matter which has much in common with actual life. The school is a preparation for life. But there is only one way of preparing for life and that is by actually living it. The school must so organize its work and its management that it requires each child to perform during the educational period those activities that will con-

front the pupil most often in later life. The school must always be a part of life, not apart from it.

SUGGESTED READING

- BOLTON. *Principles of Education*, Chap. 28.
HINSDALE. *Dogma of Formal Discipline*, Educational Review, Vol. VIII.
HORNE. *Psychological Principles of Education*, Chap. 6. .
MONROE. *Text-Book in the History of Education*, Chap. 9.
O'SHEA. *Education as Adjustment*, Chaps. 4, 13 and 14.
THOENDIKE. *Principles of Teaching*, Chap. 15.
Educational Psychology, Chap. 8.

C. THE EMOTIONAL ASPECT OF THE MIND

CHAPTER XXII

THE EDUCATION OF THE EMOTIONS

Place of the Emotions in Life.—The primary psychic manifestation is feeling. Animals low in the biological scale have a nervous system which makes “awareness” the sum total of consciousness. As we ascend the scale of animal development we find feelings assuming an all-controlling influence in life through their pleasure-pain characteristics. Man himself finds that feeling centers are the first to function in his life and the last to lose their grip on him. The primacy of feelings in psychic life cannot be disputed. They are never alone in consciousness, but always accompany every state of cognition and will, and thus give color and warmth to every phase of mentality.

In maturer life and in the educated mind the feelings continue their undisputed control of intellectual and volitional states. In the face of concrete proof, unanswerable experiment, convincing theory, we give free rein to feelings and execute the promptings of sentiment. They are the final springs to action, for, in moral conflict, they may outweigh all judgment and reason. Education of the past neglected their training, for it gave itself exclusively to developing intellect and making encyclopedic brains or thinking machines. But the heart has its sacred place in education. Without emotional development life has only one flat color, one drab tone, and is lived on one flat plane, free from the exhilaration of heights and the sorrow of depths. Education must concern itself with emotional unfoldment, for the child's feelings are crude in the extreme; they are selfish and always self-centered. They are usually as violent and

passionate as they are coarse. The need for emotional refinement is evident; education must set itself consciously to the problem of developing "the mind's capacity to feel," of making the child appreciative of the finer appeals in life, and sensitive to the subtler influence of the environment. Without emotional refinement, religious appeals, ethical impulses, and the message of art fail to thrill and ennoble. Our feelings are therefore primary in mental life, all-controlling in human endeavor, give color to our mental vision, and wings to the spirit, so that we may revel in realms far above the commonplace and the sordid.

Definition.—The feelings may therefore be defined as the tone of pleasure or displeasure that accompanies every intellectual or volitional state. Every state of consciousness has, therefore, an affective side which varies from utmost agreeableness through indifference to decided disagreeableness. From this formal definition the student might deduce that emotions and instincts are identical. While it is true that instinctive responses and emotional expressions shade imperceptibly into each other, and that every object that arouses an instinct also excites a feeling, it does not necessarily follow that all feelings or emotions are instincts. The two must be kept apart; while feelings and emotions are tones of experience, an instinct is a tendency to action, an inherited nervous coördination resulting in automatic action. Every emotional state terminates in the individual himself, but instincts enter into "practical relationships with the exciting object."

Classification of Feelings.—Since feelings give tone to consciousness, it follows, *a priori*, that this tone may vary in intensity, duration, and character. We must differentiate, therefore, four classes of feelings: (1) the feelings which, as defined, are the affective element of sensations and perceptions; (2) the emotions, the strong and intense feelings accompanying experience; (3) the sentiments, the refined emotions which have acquired a lasting association with specific objects or ideas; (4) the volitions, those feelings that end

in a decision or in an expression of that decision. These four forms of feeling form a progressive series, agreeing in their essential nature and character, but differing only in degree; they are alike qualitatively, but differ quantitatively. For this classification we are indebted to Yerkes. The further grouping of each of these forms of feelings we shall outline in considering each separately.

I. The Feelings.—No definition of feelings has attained universal acceptance among psychologists because of their vague and often indefinite nature. They are so variable in content that they seem almost illusive as we attempt to systematize them. The same object may arouse an agreeable tone in one mind and decided antipathy in another. Feelings reflect the most subjective aspect of consciousness. Thought and action can be communicated with comparative ease, but only the artistically gifted can stimulate in others the feelings surging in their minds. So individualistic are feelings that each person has his own feeling tone. At each moment every individual is assailed by a number of sounds, sights, pressure, and temperature stimulations, visceral and organic disturbances, images flitting through the mind, etc. Each of these stimulations has its own coefficient of feeling. When they are summed up they determine the prevailing mood, the personal index of feeling which not only gives the distinctive color of each life, but, in the last analysis, determines disposition.

The most differentiating characteristic of feeling is its intimate connection with sense perception. The layman often betrays his confusion of sensation and feeling when he says, "The stone feels cold," "the silk feels smooth," etc. It is this intimate association between sense fact and feeling tone that led psychologists to term feelings the affective aspect of consciousness.

The wide range of feelings is made clear when we note how differently a series of experiences affects the same person. What a range of feelings is aroused in watching a ball game, in suffering bodily pain, in taking an important exam-

ination, in the loss of a friend! Nevertheless, all these feelings can be reduced to a threefold effect, viz., (a) pleasant vs. unpleasant, (b) exciting vs. depressing, (c) straining vs. relaxing. Psychologists have succeeded in obtaining a fairly accurate measure of the value of a feeling by studying its physiological effect upon heart, respiration, muscular tension, etc. Wundt, who gave us this tridimensional theory of feelings, sums up the physiological coefficient of feelings in the following table:

Pleasant feelings: pulse retarded and intensified.

Unpleasant feelings: pulse accelerated and weakened.

Exciting feelings: pulse strengthened.

Depressing feelings: pulse weakened.

Tension feelings: pulse retarded and weakened.

Relief feelings: pulse accelerated and intensified.

Aside from reflecting the intimacy between psychic and physiological life, this theory gives us useful data for a better comprehension of the cause of emotions to which we shall presently turn.

II. The Emotions.

Their Psychological Characteristics.—An emotion is a state of feeling of high degree of tension accompanied by complex physical and physiological reactions to some stimulus. The table of feelings given above shows that the distinction between emotion and feeling is an arbitrary one of degree. The report of a tragedy at sea makes us feel sad; but on reading the details we discover, much to our surprise, that a dear friend has been lost. The feeling of sadness now gives way to an emotion of deep-seated grief; the heart action changes, a lump rises in the throat, a choking sensation is experienced and the eyes are moist as intense sorrow grips us.

Emotions are therefore opposed to sensations and perceptions, for they refer not to the outer world but to a condition of mind. We do not hold them in captivity to be used at will for intellectual ends. They are so thoroughly sub-

jective, involuntary, and intense that they master the individual completely. They vary markedly, therefore, in each individual. Nevertheless, they are contagious and beget their like in others. A cheerful person brings sunshine into a room filled with people in a negative mood; the smile is like the pebble thrown into the smooth lake, for it starts ever-widening circles of good cheer. The trite pedagogical adage which is based on this "contagion of emotions" is, "emotions must be caught, not taught."

Another characteristic of emotions is that they are usually directed toward some definite end. There is a specific thing we fear, a definite person we love or hate; our sympathy goes out to a particular individual or situation. Despite this characteristic, emotions are less coherent and do not, like other mental phases, form associations one with the other. In cognitive experience, percepts are grouped with their like into proper concepts, individual facts are united by a generalization; emotions, on the contrary, are not so organized, but remain, rather, isolated forms of psychosis.

When uppermost in the mind emotion reigns supreme. Every other mental phase becomes subordinate to it, all volitional life is colored and controlled by it. If one is in anger every act of those about him provokes resentment, for he sees attempted insult and injury. A team that feels discouraged at the beginning of the game has already lost; confidence and courage screwed to the sticking point are half the victory. So controlling are emotions that habitual tendencies in human conduct are determined by the promptings of some dominant feeling or sentiment.

Although they control action, emotions that are very intense often interfere with action. A person may be speechless with chagrin, paralyzed with fear, or motionless with surprise. All emotions prompt action, but the intensity of the emotion must wear itself off before the actions prompted by fear, chagrin, surprise, can be carried out to the best advantage. Another contradictory character of many emotions is their tendency to become blunt through repetition. The

apparent unconcern of the surgeon, the seeming indifference of the charity investigator, and the calm of the minister listening to a sorrow-stricken member of his flock, are evidences of the dulling effect of repetition on many of the finer emotions. The ability of these people to control emotional promptings and to estimate a situation intellectually is not only desirable, but even a manifestation of strength. With weak people the repetition of such emotions as fear or hate tends to produce a sensitivity which threatens nervous stability.

The characteristics of emotions reveal their contrary natures and foreshadow the difficulty of the task of educating them. Not only do emotions vary with every individual, but they vary in the same individual under different conditions. Their intense subjective nature makes impossible the elaboration of any scheme for the education of the emotions which is capable of class application. The task of refining the emotions is a delicate and a personal one, and not conducive to the best results when applied to mass teaching.

Origin of Emotions.—Psychologists have long been divided on the question of the origin of emotions. Before tracing their genesis let us turn to a description of a typical emotion, fear, as given by Darwin in his "Expression of the Emotions in Man and Animals":

"The frightened man at first stands like a statue, motionless and breathless, or crouches down as if instinctively to escape observation. The heart beats quickly and violently, so that it palpitates or knocks against the ribs; but it is very doubtful whether it then works more efficiently than usual, so as to send a greater supply of blood to all parts of the body; for the skin instantly becomes pale, as during incipient faintness. This paleness of the surface, however, is probably, in large part, or exclusively, due to the vaso-motor center being affected in such a manner as to cause the contraction of the small arteries of the skin. That the skin is much affected under the sense of great fear we see in the marvelous and inexplicable manner in which perspiration immediately exudes from it. This exudation is all the more remarkable

as the surface is then cold, and hence the term a cold sweat; whereas, the sudorific glands are properly excited into action when the surface is heated. The hairs, also, on the skin stand erect; and the superficial muscles shiver. In connection with the disturbed action of the heart, the breathing is hurried. The salivary glands act imperfectly; the mouth becomes dry, and is often opened and shut. I have also noticed that, under slight fear, there is a strong tendency to yawn. One of the best-marked symptoms is the trembling of all the muscles of the body; and this is often first seen in the lips. From this cause, and from the dryness of the mouth, the voice becomes husky or indistinct, or may altogether fail.

“As fear increases into an agony of terror, we behold, as under all violent emotions, diversified results. The heart beats wildly, or may fail to act and faintness ensue; there is a deathlike pallor; the breathing is labored; the wings of the nostrils are widely dilated; there is a gasping and convulsive motion of the lips, a tremor on the hollow cheek, a gulping and catching in the throat; the uncovered and protruding eyeballs are fixed on the object of terror; or they roll restlessly from side to side. . . . The pupils are said to be enormously dilated. All the muscles of the body may become rigid, or may be thrown into convulsive movements. The hands are alternately clenched and opened, often with a twitching movement. The arms may be protruded, as if to avert some dreadful danger, or may be thrown wildly over the head. . . . In other cases there is a sudden and uncontrollable tendency to headlong flight; and so strong is this that the boldest soldiers may be seized with a sudden panic.

“As fear arises to an extreme pitch the dreadful scream of terror is heard. Great beads of sweat stand on the skin. All the muscles of the body are relaxed. Utter prostration soon follows, and the mental powers fail.”

Steps in the Progress of an Emotion.—What are the conditions that give rise to an emotion? In the main these are three: (a) Emotions arise in a crisis in experience, when the train of ideas is suddenly interrupted by a strong feel-

ing; (b) this intense feeling soon brings the individual to a realization of a real situation in life, a condition necessitating a readjustment in experience; (c) the original feeling is now enriched by organic sensations set up in the course of bodily adjustment to the situation. These steps outlined by Titchener find their illustration in any practical experience. A person sits at his desk busily engaged in his task. No particular emotion actuates him except the feeling of satisfaction which he finds in his work. Suddenly a piercing shriek is heard and the cry of "Fire" comes from the floor below. He jumps up at this interruption. The word "Fire," the shriek, the tones, the suddenness of it all call up visions of persons in distress, danger, need of help. As this vivid imagery fills the mind, the heart action is at once affected and one or another of the physical and physiological changes noted in the illustrations make themselves manifest. After this initial expression of the emotion the individual makes the first move to render aid and secure his safety. The emotional state usually persists as long as the need for adjustment persists. Fear of the dark is hence short-lived, while grief over a death leaves its mark for a considerable period.

Emotion and Physical Expression.—From the definitions and illustrations it is apparent that the physiological changes in a state of nervous tension are as much part of the emotion as the psychic condition itself. He who does not feel a changed heart action, cold sweat, rising hair, creeping skin is really not in the throes of fear. He who has not the tear-wet eyes, he who does not feel the lump in his throat, the visceral change, the heavy heart, an aversion for food is not experiencing the miseries of sorrow. The professional charity worker who listens to a heart-rending story and says, "I am extremely sorry," without feeling the bodily affections accompanying the emotion, means, "I can understand how one in your position would be miserable." His state of mind is intellectual rather than emotional, for "a disembodied human emotion is a sheer nonentity."

The "Darwinian Theory of Emotions" holds that every

idea brings its own emotional accompaniments which are so intense that they work themselves out through the body. By way of illustration, we may offer the following: (1) One sees a train approaching—the idea; (2) he fears—the emotion; (3) the face pales, the heart action is changed, etc.—all the bodily changes characteristic of the emotion appear. (1) A beautiful canvas is seen—the idea; (2) the person is pleased—the emotion; (3) the face is brightened, the whole body experiences a relaxation.

William James and Karl Lange are sponsors of an entirely opposite theory. Upon first glance it seems almost contrary to experience. “My theory, on the contrary,” says James, “is that bodily changes follow directly the perception of the exciting facts and that our feelings of the changes as they occur are the emotions.” Modifying the previous illustrations we find the sequence to be: (1) One sees the train rounding the curve at a dangerous proximity—the idea; (2) the bodily indices of fear are manifest; (3) the person feels these bodily changes and is seized with fear—the emotion. (1) A splendid painting is seen—the idea; (2) the face brightens and the body relaxes; (3) as these changes are felt intense pleasure is experienced—the emotion.

An analysis of the common emotional experiences brings conviction of this theory of James and Lange. When the darkness fills one with fear comfort is found in assuming a manly physical posture and whistling an enlivening tune. The lad worsted in a fistic encounter forces himself into laughter and by checking his tears maintains his courage in the company of his playmates. “Count ten before venting your anger and its occasion seems ridiculous . . . sit all day in a moping posture, sigh, and reply to everything in a dismal voice, and your melancholy lingers.” . . . If, in moments of deep sorrow, you “smooth the brow, brighten the eye, contract the dorsal rather than the ventral aspect of the frame, and speak in a major key, pass the genial compliment and your heart must be frigid indeed if it do not gradually thaw.”

Objection may be made that the deliberate arousal of the physical manifestations of an emotion does not always arouse the emotion itself, for one may pretend to cry without feeling dejected or feign laughter without experiencing the exhilaration of joy. In such cases we must realize that the most vital manifestations of these emotions, the visceral disturbance, the modified heart beats, the changed respiration, are not aroused. Even in the apparent arousal of the physical accompaniments of the emotions cited in the objection, the natural tendency is to induce sorrow or joy. Leading actors give evidence that they grow pale in fright, shudder in fear, and have moist eyes in sorrow. Experience teaches that the noise of panic increases panic in the hearts of the panic-stricken; each expression of anger finds the individual's anger heightened until he almost reaches a frenzy; each succeeding sob seems to rend the heart more violently until exhaustion weakens the pangs of sorrow. Emotions are physically fatiguing. The expression of an emotion usually exhausts that emotion, because the nervous vitality is drained, and the calm after the storm must follow. At times it is found that if the object causing the emotion is kept in mind and the tendency toward expression is repressed, the vitality generated flows out through other channels. Constant brooding brings its fits of melancholy and utter desperation; intense feeling successfully restrained may finally explode in uncontrollable hysteria. It must be remembered that all people do not react in similar ways. To some people joy brings tears, and sorrow produces hysterical laughter.

Exceptions to the James-Lange theory have been pointed out; experiments on "the influence of images on the secretion of the digestive fluids" point to limitations in this view; these have led many psychologists to question the universality of this law, and to revert to the older theory of Darwin that the idea prompts the emotion which in turn produces the physical expression. Others have evolved an explanation midway between these extremes, viz., the idea calls up the emotion, which expresses itself in physiological changes; but

these movements serve only to intensify the emotion. "The boy sees the bear, becomes frightened, begins to run, and then becomes more frightened."

Application of the Theory of Emotions to Teaching.—For purposes of educational application it makes little difference whether we believe in either extreme or in the compromise theory. Every phase of this psychological question teaches the same lesson to the practical teacher, to wit, apart from the bodily reactions and physiological expression that attend an emotion, the experience itself is insignificant. To arouse an emotion in pupils it is necessary to have them assume the physical posture and reproduce the bodily actions which accompany the particular emotions. This is the psychological justification for dramatization of literature and history as treated in detail in the chapter on "Imagination." As further illustration we may offer the opening scene of "Julius Cæsar."

ACT I—SCENE I

ROME. A STREET

Enter Flavius and Marcellus, officers, and certain commoners.

Flavius. Hence! Home, you idle creatures, get you home.
Is this a holiday? What! know you not,
Being mechanical, you ought not walk
Upon a laboring day without the sign
Of your profession? Speak, what trade art thou?

First Com. Why, sir, a carpenter.

Marcellus. Where is thy leather apron and thy rule?
What dost thou with thy best apparel on?
You, sir, what trade art thou?

Second Com. Truly, sir, in respect of a fine workman, I am but,
As you would say, a cobbler, etc.

Children called upon to read this selection usually render it all in the same tone. They do not differentiate the loud and authoritative questions of the officers from the meek, gentle, and submissive answers of the commoners. Instead of explaining the position of the officers in Rome, their authority, and the undignified position of a commoner as a

reason for a changed reading, let the child assume the physical posture of an officer in the Roman army. At once his voice is raised, his speech is haughty and domineering. In reading the reply of the second Commoner the child assumes the stoop of the old cobbler and automatically his voice is lowered and a tone of subservience and respect is heard. An application of this principle of emotions to literature lessons would produce spontaneous expressive and intelligent oral reading.

Origin of Physical Expressions of Emotions.—Biology explains these bodily movements in emotional states as relics of actions useful in ancestral life, and holds that they are weak revivals of those activities that meant survival in life's struggles. In astonishment there is a raising of the eyebrows and an opening of the eyes to give the best possible visual impression of the impending danger that is responsible for the surprise. The mouth is open because ancestral man had to take a full breath prior to the attack on the surprising object. The snarl and the sneer accompany displeasure because "early man had large canines which he unfleshed." In anger the nostrils are distended and the teeth gritted; if the exhaustion which followed the struggle necessitated more forceful breathing, "why was the mouth not opened?" Spencer asks. He answers his inquiry by explaining, because "the combatant's mouth was filled with part of his antagonist's body." These specific explanations may be far-fetched and even erroneous, but the theory in general, viz., that bodily movements accompanying an emotion are the life-saving actions of ancestral life is in harmony with progressive biology and the theory of instincts.

Gradations of Emotions.—Emotions vary in intensity from a mere excitation to an all-consuming passion; they vary also in duration from a transitory state to a mood, a persistent emotional tone that determines the color of experience which occurs during its reign. An emotion of fright grows into a passion of horror and dread, and then, as the nervous system is shattered by a succession of these excitations, pales

into a general mood of suspicious fear. The spectrum of emotional colors is rich and variegated; its dominant color determines temperament, which is a reflection of the average mood of the individual. Psychology usually groups man into four classes according to temperament: (a) the choleric—strong in feeling, quick in thinking and acting; (b) sanguine—weak in feeling, quick in thinking and acting; (c) melancholic—strong in feeling, slow in thinking and acting; (d) phlegmatic—weak in feeling, slow in thinking and acting. The teacher who knows the pupils temperamentally has information useful in disciplining and teaching them, for she knows the nature of the appeal that can be made and the response that is to be expected.

III. The Sentiments.—Whenever an emotion becomes permanently associated with a particular object or idea it is known as a sentiment. Suffering, misery, extreme poverty always arouse the same affective state, which is known as the sentiment of pity. The sight of those near and dear to one stir the sentiment of love. Patriotism, sympathy, faith, pride, æsthetic appreciation, religious inspiration are additional sentiments that control in human conduct because of the permanence of the associations between feeling and idea. Sentiments can readily be summed up under four heads: (a) intellectual sentiments arising when the mind is busied with questions of accuracy and interpretation, as in wonder, surprise, curiosity; (b) ethical sentiments prompting the championing of the right and arising in social relations; (c) religious sentiments having their origin in recognition of divine power and sanctity; (d) æsthetic sentiments filling the mind in the contemplation of the beautiful and the sublime. These sentiments constitute the most desirable phase of human emotions.

IV. The Volitions.—Every active and convincing judgment brings with it a craving for a decisive end, a prompting to attain the end thought useful and proper. This emotional state involved in all effective judgments and urgent decision is known as Volition. As they are the springs of

rational conduct we shall revert to them again in the study of the will. They are introduced here to serve as a transition to the final phase of mind, the volitional aspect of mental life, and to reëmpHASize the unity of consciousness which is always outraged in the inevitable classification and subdivision in a formal treatise.

Education of Emotions

The Topic Outlined.—Emotions that are refined and controlled are an evidence of a high order of mental development. The problem of their education looms up, therefore, important and colossal. Since the feelings are so varied in their nature and character we cannot consider them in toto, but must rather seek to outline suggestions for their education according to their classification. We shall, therefore, consider the education of I. The Egoistic Emotions, II. The Æsthetic Sentiments, III. The Social and Ethical Sentiments.

I. The Education of the Egoistic Emotions.—The undesirable emotional states can be controlled and refined by methods very analogous to those suggested for the educational control of instincts. We need, therefore, only repeat the methods and suggest the applications. Egoistic emotions can be controlled by three practices:

(a) *By Guarding against Conditions that Provoke Them.*—The most obvious means of promoting control is to weaken undesirable emotions by infrequency of expression. The child who is irritable should not be allowed to play with a friend given to teasing or crossing others; the nervous child must be spared all conditions that tend to frighten; the selfish child must not be given all the pleasures he seeks nor be permitted to gratify his every desire. This mode of control is equivalent to repression, and has therefore all the limitations inherent in such a method. It does not follow that, merely because an emotion is not expressed, it is obliterated. It is only dimmed and may therefore assert itself with sur-

prising vigor. Repression is very often impossible; it is dangerous to attempt to repress anger that is at white heat. As a method of guarding against violent paroxysms of fear, terror, and anger, this method of disuse is commendable. Parents who frighten children into obedience through stories of dread and fear are guilty of stupidity bordering on barbarism. This seems to be the limit of the efficiency of repression and disuse, for, under many conditions, expression is far more desirable. It is always better to let the child finish his sobbing or giggling, for the emotion is spent in the expression and intensified in the repression. That emotional training is the best educationally which develops self-control of one's emotions. Repression, since it necessitates direction and intervention from without, stands low in the educational scale.

(b) *By Punishment.*—This method is usually not efficacious unless the punishment follows as a natural consequence of the offense. In such cases the child associates permanently the expression of the emotion and the loss that it entailed. When anger prompts the harsh word, the memory of a dear friend who was alienated may serve as a means of checking the passion. In a preceding connection it was seen that the limitations of this form of punishment by natural consequences are too numerous to make possible an extended application of its theory.

(c) *By Guidance and Direction.*—The most educational method of controlling the coarser emotions is the direct opposite of repression. The impulse back of an egoistic emotion is not necessarily bad; its goal is usually undesirable. Hence any method that hopes to attain success in dealing with these egoistic emotions seeks to direct the force they generate to ends that are worthy. Adam Smith emphasizes the true method of education when he says, "The great secret of education is to direct vanity to proper objects." The child who is vain about his school rather than himself or who gives way to anger at an injustice perpetrated upon a weak member of the class is utilizing an emotion ordinarily deemed

undesirable toward most desirable ends. For the proper guidance of these individualistic emotions a few suggestions are offered to parents as well as to teachers.

Suggestions For Proper Guidance.—(i) Emotions accompany thoughts. To weaken undesirable emotions in an individual, a new thought basis must be supplied. Parents must seek to develop in the child new interests, through reading, athletics, studies, friendships, visits to places of interest; as new ideas assume control of the mind new emotions reign, for the new thoughts bring their own accompaniments.

(ii) "Assume a virtue if you have it not," is a second suggestion that may be of aid in guiding emotions to useful ends. Let a child pretend kindness and he soon develops a more charitable attitude. The sympathy that one shows may be pretended at first, but it soon softens the heart and a kinder spirit is developed. He who gives, though unwillingly at first, becomes generous even as a result of his forced charity. The child must be encouraged to take on the actions of the emotions we wish to arouse in him.

"Supply a new action," James tells us, "and the emotion dies." He counsels counting ten before giving vent to anger; changing the posture from a moping to an erect one, "passing the genial compliment" for banishment of melancholy. The advice is useful and sound, but not easy of class-room application in our system of mass teaching and mass disciplining. How can the teacher direct a pupil to change his actions, which are emotional accompaniments, if the pupil is at the height of the emotion? Parents can do much by waiting for the calmer hours; they can explain the dangers and the undesirability of the emotions and advise simple means of dispelling an emotion like anger. The child must apply the treatment himself if a change is to be achieved. At first the results are discouraging, as any parent can attest. But repeated counsels, repeated efforts, constant watching, and patient coöperation on the part of parents will lead to a gratifying change.

(iii) Never take an emotion at the flood. Emotions that

are sharp and intense are usually short-lived; expression of these emotions brings relief. When an emotion is at its height it is better to wait until it has expended itself than to attempt to thwart it. Any other practice serves only to intensify the feeling. Teachers have learned through bitter experience not to order a child in a fit of anger, or command action when stubbornness almost paralyzes the muscles. When the passion subsides the child carries out the action and meekly takes the punishment administered. People who are given to sharp emotions, but who express them, are safer by far than those who harbor an ill will which grows in bitterness with successive reflections. The former are usually open in their action and ready to forget. The latter generally perpetrate a well-planned injury.

(iv) To wound a feeling too often is to deaden it. The teacher who is constantly ridiculing the same lad, forever publicly censuring the same culprit so deadens the child's sensibilities that the sense of shame loses its sting and disgrace its dread. Self-respect is now undermined and the individual is in a precarious emotional condition, for he is no longer sensitive to the loss of the respect of others; the all-controlling motive in the conduct of weak individualities—"the good opinion of one's fellow-beings"—is dead. Shame and self-respect are two potent deterring agents in human conduct.

In dealing with the coarse, egoistical emotions teachers and parents must not expect instantaneous relief or complete revolutions in the nature of the child. Progress in emotional refinement is slow and discouraging; repeated efforts, unrelenting care, and maturing years, with their moral awakening, are the main factors in emotional development.

II. Education of the *Æsthetic* Emotions.—The study of the social content of the curriculum revealed the importance of the *æsthetic* function of education which seeks to develop a sense of the beautiful and a consciousness of the sublime. The *æsthetic* craving opens the eyes to the harmony of nature and of man, makes the ear sensitive to the beau-

ties of sound, inspires the soul with the message of art, finds rest in green fields, contentment in the mirror-surface of the lake, exultation in the mountains and towering peaks. Life is not life that is lived without the thrill of æsthetic emotions. Although the task of educating the æsthetic emotions looms up gigantic on the horizon, the teacher need feel no discouragement, because this problem reflects the inspirational side of her work, the inculcating and nurturing of ideals, which blossom only after long and arduous cultivation.

Æsthetic sentiments are not peculiar to civilized life. The barbarian, the bloodthirsty cannibal, the roving nomads gave evidence of an inherent craving for the beautiful in the adornment of their persons, the decoration of their gods, and the designs on their wearing apparel and household utensils. They had a sense of rhythm which prompted their dance and music. Civilization is not the creator of the sense of beauty; it brings refining modifications and more intense appreciation of æsthetic life, so that the art impulse becomes a force that is both ethical and social in its import. The mind's content always craves expression of its most intense ideas and sentiments. The æsthetic sentiment felt by the artist must be communicated to his fellowmen; a bond of sympathy is at once formed between man and man. The longing for a sympathetic chord in another, together with the passion for self-expression, is the origin and the cause of the best art forms. It was this craving for a sympathetic listener that led the savage to dance and sing, to scratch his ideas on stone, to adorn his person, or his clothes, to imitate whatever stirred his soul in nature. The art sentiment springs eternal in the human breast.

The æsthetic nature has too long remained in the penumbra of educational endeavor. Education that neglects it is neither modern nor liberal. We must suggest, therefore, aids which are within the scope of education for the development of æsthetic emotions.

Agents in Æsthetic Education: (a) *The Teacher.*—The nature of emotions taught us that emotions are contagious,

that enthusiasm must be caught not taught, and that inspiration begets inspiration. The teacher becomes, therefore, the most potent factor in the æsthetic development of the child. If he is alive to life's finer aspects, to its varied hues and beauties, his pupils will feel these joys. The teacher who is deaf to music, blind to color, indifferent to the beauties of the environment, unsympathetic to the birds, the bees, and the flowers of nature study, deadens every spark of enthusiasm and kills every fine sentiment lurking in the children's bosoms.

(b) *The Curriculum.*—Emotions are the ever-present accompaniments of ideas. Direct emotional training is therefore impossible. The indirect mode of educating emotions is to stimulate in the mind those ideas that give rise to the emotions to be aroused. The curriculum, therefore, becomes a very important agent in the emotional life of the child. Through literature, nature study, drawing and design, picture study, and music, the elementary school curriculum makes its contribution to the æsthetic development of the child. Literature that subordinates form to content, appreciation and inspiration; nature study that brings the child into direct contact with the plant and animal life through the school garden, the city parks, the botanical and the zoological gardens; drawing that is taught for expressional purposes rather than for a mastery of technical laws and principles; music that minimizes the science of music but emphasizes the song and seeks to give (through the phonograph, if necessary) an acquaintance with the best that the masters of harmony have produced—all these are vital and successful means of refining the emotions of the child and revealing the grandeur and the sublimity of the æsthetic in life.

(c) *The Environment.*—The human mind mirrors within the splendor and beauty of the world without. It becomes important, therefore, that we surround the child with what is attractive and tasteful. The school must be a model of architecture as well as of sanitation. Every class room must be beautifully and appropriately decorated. The pictures

on the walls, the plants on sills and ledges, and the aquarium give evidence by their presence of an attempt on the part of the teacher to produce for the child an æsthetic environment. The results of such endeavors are intangible but positive. The beauty of such surroundings sinks deep and makes its permanent impression upon the impressionistic mind of the child. He who has seen children of the miserable tenements of our great cities nail pictures on the walls of their homes and coax stubborn little plants to grow on the window ledges facing dark and foul-smelling airshafts has obtained incontrovertible proof of the far-reaching inspiration of the properly decorated class room. Parents who are their children's companions must open the windows of the growing souls to the grandeur of the natural environment. They must teach them to look up to the stars, to seek the thrill of a glorious sunrise or sunset, to find joy in green fields and wooded hills. Only a cue is needed to stir the dormant æsthetic cravings in the bosom. John Ruskin, when a mere child, was taken by his parents on all their trips through the British Isles. When the party arrived at a beautiful scene they always pointed it out to the lad. Ruskin adds, "These scenes which I would not have noted myself revealed to me their beauty and inspiration." Browning's Fra Lippo Lippi tells us,

"For don't you mark? we're made so that we love
First when we see the painted things we have passed
Perhaps a hundred times, nor cared to see; . . ."

Parents who imitate the practice of the elder Ruskins must be sure of the sincerity of the responses which they evoke in their children. Too early an indulgence in æsthetic education may produce the affected sentimentalist rather than the true beauty lover.

III. Education of the Social and Ethical Sentiments.—Closely allied to the æsthetic sentiments there is another group of finer feelings which, when aroused, seem to function for the well-being of others. The individual experiences

personal pleasure in the social service which he renders. Prominent in this group are love, reverence, loyalty, sympathy, respect, and their like. Those sentiments that are intensely social and altruistic in nature to-day find their origin in extreme egoism. A brief reference to some of these sentiments will serve to illustrate this view. Love, with its promptings of strong attachment for another, was originally an expression of dependence, of the need of protection and of care on the part of the young. The feeling of attraction on the part of the parent was prompted by the maternal or paternal instincts in the parents. This feeling was developed to a high degree of intensity because of the long period of infancy and was in the course of evolution gradually broadened to include others in the family group. Sully tells us that originally love was "largely a reflection of the various physical satisfactions and comforts which the child associated with its parents."

In the course of mental evolution the individual developed mind, with powers of self-analysis sufficient to make him realize his own inferiority in comparison with the gifts of others. With the control of jealousy and of envy there was evolved a feeling of reverence toward superior skill and force. Although this feeling of admiration and reverence is less intense than love, it is more inclusive and prompts a subjection of one's own individuality to that of another. The highest social form of these sentiments is sympathy which finds a peculiar satisfaction in living in the joys and sorrows of others. It is by far more inclusive than the preceding forms, often more intense and very contagious socially. It is the great social tie among mankind, and is responsible for the universal moist eye which follows a catastrophe or the gladdened heart of good fortune. Sympathy can be evoked only in those individuals whose imaginations are vivid and can picture the tragedy or the joy in the lives of others. In its turn, sympathy is a great aid in comprehension and intellectual insight. Only those who are gifted with broad sympathies can translate their lives

into that of a Keats or a Shelley, feel the life they felt, live the life they lived.

These altruistic sentiments must be accorded their place in the education of the child for a twofold reason. First, they are important aids in the intellectual life and development. The preceding illustration serves to emphasize the need of sympathy for thorough intellectual comprehension. What holds true in this case of literature applies with equal force to any intellectual circumstance. To really understand a theory of economics or sociology, a plan in pedagogy, a principle in ethics or religion, one must be able to see each of these through the eyes of its advocates, interpret life through them even as they do. This intellectual sympathy in no way precludes a final disagreement with the proposed views; it simply guarantees more accurate comprehension. A second reason for the cultivation of these social sentiments lies in the impetus they offer for moral progress. The child is the center of his own universe, all of life revolves about him; his needs, his pleasures are supreme; to them all must bend. While the child is an intense egoist, he is not a hopeless one. He must be displaced from the center of his own sphere and be taught to place all of mankind within the circumference of his life. How can the social spirit be inspired in self-centered childhood?

Factors in the Education of Social Sentiments: 1. *The Social Environment.*—The social environment of the child is the first great agent operating for the refinement of the egoistic feeling. Parents must weave such social relationships about their children that their potential altruism is stirred. The school is, in the main, too intellectual in its appeal to reach the child emotionally. The education of the sentiments is therefore the function of home and of church. These social agents must inspire the lessons of kindness, sympathy and generosity through worthy examples of parents and religious teachers. From the earliest years the child should learn the need of sparing others. He should be taught to dress and undress himself without calling on his elders;

he should experience the joy of giving through the care of pets, the feeding of birds, and the like. The spirit of good will called forth by holidays like Thanksgiving Day and Christmas must be expressed; the child should be a giver as well as a taker, he should feel the joy of helping a less prosperous friend by presenting him with part of his treasures of toys. Every social club of boys and girls should be imbued with the idea of social service and should be made responsible for an act of charity. Every class in a certain school has a definite social mission that it tries to carry out; one class supplies coal to a poor family, another buys shoes for those children whose parents cannot afford that expense; still another pays for window boxes and flowers in some neighboring hospital. Those pupils whose financial status does not permit monetary outlay are organized in a "Sunshine League," whose function it is to collect magazines, books, and newspapers from families that can spare them and bring them to hospitals whose patients crave for means of dispelling the tedium of the sick hours. The "Readers' Circle," composed of the oldest boys and girls, sends its members regularly to an institution for the blind, where they spend an hour or two reading newspapers and magazines to the unfortunate inmates. In all cases where financial aid is rendered the children do not know the identity of the beneficiaries, but the knowledge of the service they rendered and the satisfaction of the happiness they achieved for others stimulate the finer sentiments and prompt moral growth.

2. *The curriculum* offers a second means of indirectly educating the social sentiments. Since every idea brings its own emotional accompaniment, it follows, therefore, that the proper basis of ideas must be given. The curriculum offers the inspiration of literature and history, the concrete and personal embodiments of those sentiments that we wish to inculcate. The children's minds can most easily be influenced by these models if their imaginations are stirred and they themselves are placed in the center of the situation. To feel the unselfish devotion and interest which actuated Washing-

ton they must imagine themselves the great general, subjected to the temptation of being offered the crown. "Would *you* have refused?" the teacher asks, as she strives to stir the same patriotism in the heart of the child. The children must now imagine themselves Columbus on the bridge of the frail bark, overhearing the mutinous crew. "Would *you* have continued on this voyage?" is a question whose answers awaken admiration for the undaunted and determined discoverer. Let the child imagine himself a bird flying northward in the spring, a homeless dog, a tired horse; ask him to go through the trials and tribulations of a day's life in the precarious existence of these animals. The ideas aroused in the mind call forth a feeling of sympathy which will do more for developing an attitude of kindness toward animals than any direct appeal or objective demonstration. The opportunities in the curriculum are too varied and too numerous to allow for more than a mere suggestion of the means and possibilities for emotional refinement.

3. *The Discipline and the Organization of the School Make For a Proper Social Attitude.*—That discipline which is based on social needs, which makes the child realize that all school regulations are not the arbitrary dictates of teacher or principal, but are made necessary by social organization of the little school community, is constantly fostering proper social feeling. The previous study of discipline showed that the child of reasoning age must learn that property must be respected, books must not be torn or desks mutilated, floors must not be littered with papers, inkwells must not be filled with sand, shoes must be scraped clear of mud before entering, the assigned stairways must be used, because of the numbers in the schools. Others must use the same books, desk, or inkwell, must sit in the same room, must not be subjected to the dangers of disease lurking in dirt. Discipline properly organized on social need rather than blind obedience develops social insight and social perception which prompt social consideration and kindness.

4. Much can be accomplished by educating the altruistic

and ethical sentiments by supplying what the psychologist terms the "*Expulsive Power of Higher Emotion.*" In brief, this principle declares that when an emotion occupies the mind all other emotions that are lower in the ethical scale disappear instantaneously. Thus the hatred that one bears toward an unfriendly person disappears the moment he is seen in a circumstance which calls forth pity. He who is attempting to deceive his competitor finds that all desire for deception vanishes as he sees his rival in an act which provokes admiration. In the same way pity banishes hatred, admiration kills treachery and falsehood, maternal love drowns desire for personal safety, and real love kills bodily lust.

This phenomenon of emotions has a twofold conclusion for education. First, it becomes necessary to include in the curriculum such subjects as are constantly making an appeal to the finer sentiments in life. These feelings preclude the existence of the coarser emotions. Secondly, the problem of ethical instruction becomes possible of solution. If, in all moral teaching, it were necessary to eradicate base feelings and low ideals before positive moral appeals could be made, the task would be hopeless indeed. Psychology comes to the rescue. Its principle of the "Expulsive power of higher emotions" indicates clearly the method of the teacher of ethics. It advises him to make at once his appeal to the better nature and finer sentiments of the child. The moment the child responds and feels the impulse of the more social emotions, all undesirable feelings are doomed to instantaneous, though temporary, death.

5. *Moral growth follows the expression of a moral impulse.*—Speak the kind word and the feeling of love is aroused, do the favor asked and the feeling of sympathy is stirred, show anger in resentment of a wrong and the feeling of justice is strengthened. The ethical lesson which makes its intellectual appeal but provides no means by which the children can express the social sentiment aroused, fails in its dynamic aspect. An emotion unexpressed dies at once. A sentiment, however altruistic, that has no motor consequence,

fails to ennoble. Dramatizations of appropriate situations of literature and history, seeking, as they do, to afford a motor expression of the emotional content of the mind become, therefore, instructional aids in the education of the social sentiments.

SUGGESTED READING

ANGELL. *Psychology*, Chaps. 13, 14, 18 and 19.

BAIN. *Education as a Science*, pp. 52-120.

DEXTER AND GARLICK. *Psychology in the School Room*, Chaps. 16, 17, 18, 19.

HORNE. *Psychological Principles of Education*, Part III.

JAMES. *Psychology (Briefer Course)*, Chap. 24.

RIBOT. *Psychology of Emotions*.

SULLY. *The Teacher's Handbook of Psychology*, Part III.

(A good bibliography on pp. 439, 469, 507.)

YERKES. *Introduction to Psychology*, Chaps. 15 and 21.

D. THE VOLITIONAL ASPECT OF THE MIND

1

CHAPTER XXIII

THE WILL: ITS PLACE AND FUNCTION IN HUMAN LIFE

Place of Will in Mental Economy.—The study of the intellectual and the emotional aspect of mind showed the primacy of feelings. Through them man becomes aware of the outside world as well as of the self; through their affective characteristics of pleasure and displeasure they serve as warning in early life. Mind then evolved a second mode of functioning, as an intellect; now it can recognize and understand life's forces and demands. If these two functions summed up all of the mind's capabilities life would be static indeed. Man would be the helpless victim of his environment, powerless to carry out counsels of intellect. He would receive impressions but could not express his consciously conceived plans. He would be acted upon but could not react. He would be molded but could not mold. "Adjustment to environment" in the dynamic sense of man reshaping the environment to suit life's needs would be absolutely impossible. Personal initiative and self-directed action toward self-chosen ideals would be far beyond human possibility. Man would be wafted about on the wings of chance.

Will makes possible the highest development of the individual, for, through it, powers and possibilities are actualized, the noblest sentiments are expressed and the most brilliant conceptions of human reason are brought to fruition. Will is the directive activity of psychic life and makes both intellect and emotions dynamic, for it makes the mind terminate in action. In the ultimate analysis it is the test of human efficiency. It is through action that we gauge the worth of

any man in the game of life. What he knows and thinks does not interest us. Only so far as these mental states may direct action do they become the concern of society. He who thinks beautiful ideals is not necessarily living an ethical life. Only as these conceptions work themselves out in action do they make the individual moral. Active participation in society determines the social efficiency of any member of the community.

Judged from the highest function of mind, the aim of education must be to produce a proper acting individual. The older systems of education failed very often because they emphasized mere knowledge acquisition and worshipped mastery of facts. The new educational gospel seeks the use of the knowledge acquired, since it is based on the belief that, "aside from its use, a fact has no other end or worth." School organization has not yet entirely freed itself from the old fetish. The over-crowded curriculum under which so many schools are laboring is an evidence of this relic of the former educational ideal. Another proof is found in the fact that almost all examinations are tests of what children know rather than what they can do. Promotion is too often determined by acquisition of facts rather than of power.

The Meaning of Will.—What is the meaning of will, the crowning force of mental development? Will has been subjected to many analyses and has been explained in various forms because our religious beliefs and moral attitudes are the ultimate factors which color our conception of will. In the main one finds two prevailing notions of will. To the lay mind will is a separate and highly specialized power or faculty of the mind which assumes control of all executive mental work. This view holds that each person has an independent self, a "psychological ghost" called will. Evidence of this conception is found in the popular expressions, "He failed because of his weak will," "Success was a foregone conclusion with him because of his strong will." From this it would appear that will is the monarch of the mind sitting on his throne, issuing commands and dictates and enforce-

ing their execution. This conception of will is very often preached from the pulpit and expounded in editorials of newspapers.

But psychology refutes such an artificial conception. Will is only a mode of mental activity. The mind is always a unit in its operations. Will is an aspect of the various forms in which the mind can express itself. Will is therefore the "Whole mind in action," "The active side of intelligence," "Deliberation issuing in conscious choice." Will is only the active aspect of ideas and emotions.

A few concrete illustrations will readily reflect the truth of this psychological conception of will. One becomes acquainted with a person or learns a new law in his favorite subject. Every cognition brings with it an emotional accompaniment; the new acquaintance or the knowledge is found to be interesting. This pleasurable feeling arouses a desire to know more of the person or the new principle and prompts to such action as may satisfy this yearning. Will in this circumstance is only an aspect of the idea, it is merely the active phase of consciousness. In the detailed analysis of emotions it was seen that one does not really experience fear unless the eyes open wide, the nostrils become distended, the regularity of the heart action is interrupted and every hair seems to rise. Sorrow without the lump in the throat, the heavy heart, the moist eye, the aversion for food, has no pangs and causes *no* misery. Will in these illustrations is only the motor side of emotions. The pencil on the table is recognized as the one that is missed; the owner at once reaches for it. Think of whistling; what an effort to keep the lips from puckering. The teacher, explaining a new move in calisthenics, asks the children to stand in position as she explains the successive steps. After the first few moments the children begin to imitate the teacher despite the order to remain "in position." Punishment is not justified in such cases, for the very disobedience gives proof of attention and effort at comprehension. It is

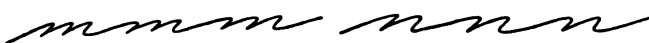
much easier for the inattentive lad to obey the teacher and "make no move;" there is no idea in his mind craving for expression. The face gives evidence of changing emotions, so that he who looks may read. People who have unusual facial control betray the changing moods in other ways beyond control. The truth or falsity of the evidence which a witness gives can be detected by the changing heart action. All mentality has two aspects, an ideational and a volitional tendency; consciousness is therefore *ideo-motor*.

Implications of Ideo-motor Conception of Mentality.—

This conception of consciousness as a duality of thought and action has important conclusions for those interested in the conduct of children. The first of these inferences is that volitional training is, as a rule, an indirect process. Just as emotions are trained through the intellect, so, too, the will is appealed to indirectly through proper ideas and ideals. Since consciousness is *ideo-motor*, a knowledge of what is right is the first step in the direction of proper conduct. Merely knowing what is right is not a guarantee of right action, for there may be manifold tendencies operating toward opposite ends. But, all conditions being under control, the initial step in proper action is the possession of right ideals.

This *ideo-motor* conception shows the teacher that classroom discipline must be organized on a positive rather than on a negative basis, that commands should take the form of "Do" rather than "Do not." Training based on a series of "Don'ts" is ineffective in the extreme for numerous reasons. The positive idea always looms up with irresistible force while the negative seems only a passing suggestion. In the orders "Don't scratch your desk!" "Don't look at your neighbor's paper!" the ideas, "scratch," and "look," have a fascination which places them in the focus of consciousness, while the "don'ts" are relegated to the marginal fringe. The action suggested is concrete, the negation is abstract, hence action takes precedence over negation. More will power is required to repress the tendency to action than to carry

out another action. "Keep your desk looking new" is simpler to carry out than "Do not mutilate your desk," although both lead to the same end. It is advisable, therefore, in a penmanship lesson in which children are making lines of "m's" and "n's" thus to say "Round tops" rather than "Do


not point the tops." The repetition of "Rounder, Rounder" as the children write acts as unconscious suggestion and the character of the penmanship changes more rapidly. And finally it must be remembered that youth is the period of action when life seems to be a persistent tendency toward expression. When the whole system craves for something to do parents and teachers suggest what not to do.

A third conclusion that we may safely accept is that will is more than a mere congenital gift or an accident of birth. Will is too often conceived not only as an independent ego in each individual but also as a fixed force in mental life. This conception holds that man is born weak-willed or strong-willed with failure foredoomed or success assured. The psychological analysis of ideo-motor consciousness, however, teaches that if proper ideals are implanted they will take root and prompt right conduct. Just as there is growing power in every seed planted in the soil, so there is motive power leading to desirable or undesirable conduct in every idea assimilated by the mind. This view of action saves the teacher from the fatalistic conception involved in the hopelessness of the older belief of will and gives hope and promise in training for proper conduct.

Free Will vs. Determination.—The reader may ask at this stage of the discussion, "Is not this an open avowal of free will?" While this is a denial of the belief in determined will and predestined action there is no reason for assuming the other extreme to be true. Within the limits of inherited tendencies, influences of environment, and habits acquired in a lifetime, man can become what he wills. Man can be what he pleases, but it is not given him to please to develop any

haphazard character. Every individual will consciously choose to perform to-day actions that are in harmony with the kind of life that he has led. The person who has lived a life of industry and conscientious endeavor cannot choose to pass the remainder of his days as an idler and a social leech. Man wills in terms of what he has habitually willed just as he thinks and feels in terms of all he has thought and felt in the past. The law of apperception knows no exception in mental organization.

The conclusions for volitional training are evident. We must lay a strong foundation of good impulses and worthy actions; we must develop in the child habits of right conduct and inculcate proper attitudes. These accumulated tendencies form a powerful stock of inhibitions so that when a wrong act is willed the whole nervous system rises in revolt. A well developed will is only the resultant of the impulses of past life. Every new ambition in life is determined by old struggles and ambitions. Life's actions are like the rolling boulder, which is constantly gathering momentum in its downward journey, each moment's fall making the next stronger and inevitable. The sum total of human action gives a fixed tendency toward future action which determines character.

Conflict of Ideas for Action.—There are times when two conflicting ideas or desires occupy the mind. The stronger of the two leads to what is recognized as less moral, the weaker to a more moral end; the former brings immediate pleasure, the latter only the satisfaction of duty accomplished. Which of these ideas will be chosen, which will receive the action of the will?

James states the irrevocable law as "The terminus in the psychological process in volition, the point to which the will is directly applied, is always an idea." It follows therefore that in a conflict of ideas that idea will receive the application of the will which can establish the greater number of associations and make the greater number of consequences dependent upon it. As an illustration we may consider the

lad who feels a yearning to stay away from school on a spring morning. There is an ensuing conflict in which he sways from impulse to anti-impulse. For a few moments he is a helpless victim tossed about in hesitation from "yes" to "no." What a series of ideas now flit across his mind! "Play truant!" The day is beautiful, others are sure to do the same, the boys are urging, the dread of being called a coward, he is not altogether sure of his lessons anyhow, just this one day and never more! "Go to school" brings its coterie of ideas to reinforce it,—the displeasure of his parents when they find out, the deprivations and punishments that will follow, all good excuses are used up. The persistency and the number of reasons that he can group around each idea will determine whether or not the teacher will count him among the present. Some argue, "Not the number of ideas called up, but the reasons which have the greatest meaning for the individual will determine the action." But when one analyzes what ideas will have the greatest meaning for him, he sees that they are those which in their turn are associated with the greatest number of dependent ideas. In the end it is therefore the number of ideas which the impulse or the anti-impulse can arouse that will determine the point of application of the will. McClellan and Dewey therefore urge, "True effort consists in reënforcing by additional ideas, desires and motives the side felt to be the weaker."

This simple principle has its application in teaching. In giving an ethics lesson the teacher hopes ultimately to influence action, for conduct must be improved. After the moral principle is explained the teacher must establish for it as many associations and interrelations and make as many conditions dependent upon it as possible. The greater the number of ideas a moral concept stirs in the mind, the easier does it become to act in accordance with it and to overcome the impulses which tempt and counsel its violation. The day's ethics lesson should therefore not be given in an isolated period especially reserved for it. We must wait until an appropriate background is offered by literature, history,

civics or class-room exigencies. Only when there is a real situation and a real moral conflict present can the lessons of ethics find that reinforcement which gives them motive power and makes them springs to action.

Inhibition.—We must now consider what happens to the second idea which is not acted out, and, from a superficial appearance, seems to receive no action of the will. If consciousness is *ideo-motor* how does it happen that the thought which calls up the least number of ideas is not also motor? The impulse which has the greatest thought associations receives the positive application of the will and is worked out in action, while the other receives a negative action of the will and is repressed or arrested. This arrested action is known in psychology as inhibition. Our motor or efferent nerves carry two kinds of impulses from the cortex of the brain to the muscles: (1) the active impulse and (2) the inhibiting impulse. In the main the spinal cord controls the motor impulses, while the cerebrum, the brain proper, looks after the inhibitions which serve as cautions in life.

Inhibition the Measure of Will Power.—Inhibition produces hesitation and delay and thus enables each individual to direct his life more consciously and deliberately. Inhibition is an index of matured will and is a measure of self-control. The development of inhibition becomes, therefore, an important phase in volitional training. Education has three means of achieving this end.

How Develop Inhibitory Powers.—The first means of developing the power of inhibition is by a process of repression. In this method the teacher gives negative commands and by careful watching secures obedience. "Do not whisper," "Do not raise hands," are the edicts which the children receive; a graded list of punishments enforces obedience. Since the basis of this mode of controlling inhibition is fear and since it depends upon the direction and surveillance of outside agents the method is educationally weak. It fails to develop the ability of self-inhibition. In many circumstances

it is the only means of preventing the expression of undesirable impulses.

Inhibition by substitution and guidance is a more effective means of controlling conduct. This method realizes that repression is not always possible nor desirable, that an impulse, per se, is usually not bad. It seeks therefore to allow each child to express his cravings for action, but it substitutes worthy for unworthy ends. The impulse is expressed, but the original directions of the activity are inhibited. The numerous illustrations * of the methods of controlling instincts by substitution and guidance as outlined in the chapter on "Instincts" will give concrete evidence of the efficiency of this mode of developing inhibitory power.

A final method of inhibiting wrong ideas and low ideals is through the "expulsive power of higher emotions." In the study of the education of the social and ethical sentiments in the preceding chapter it was seen that any sentiment that occupies the mind precludes the existence of all emotions below it in the ethical scale.† The concrete instances that are offered and the implication for ethics training that are there explained reflect the importance of this means of developing in the child a stopping sense which makes for responsibility of action and maturity of conduct.

Will Classified in Terms of Motor and Inhibitory Impulses.
—With motor and inhibitory impulses as the basis, all individuals may be grouped under two heads, viz., The Normal Willed vs. The Perversely Willed. The adjustment of these two characteristics determines the following classification, which differs slightly from the one offered by James.

(1) *The normally willed* person can control his actions; each impulse is subjected to that kind of inhibition which gives time for consideration, so that each act is not only well-intentioned but thoroughly responsible. This class includes the individual who thinks twice before he acts, who finds no need for apologies, whose level-headedness makes him safe

* See page 168

† See page 419

in danger and calm in turmoil, whose advice in the face of chaos is useful and helpful.

(2) Opposed to this small group of individuals we find those with a *perverse will*, which arises from a confusion of contending impulses of motor and inhibitory forces. When the inhibitory force is the greater it is called (a) *The Obstructed Will*, but when the motor impulse is the stronger it is known as (b) *The Explosive or Precipitate Will*.

Explosive or Precipitate Will.—Those whose ideas work themselves out in action too quickly to allow for a period of hesitation when reason can assume control are known as the "Explosive Willed." This condition of perversity of will may be traced to a double origin. The first cause may be an utter lack of inhibition. Past habits may render an individual so weak that he cannot make a man's struggle in the face of the slightest temptation. "No" is unknown in such a person's moral make-up. A drunkard or a waster may not feel an irresistible yearning for those sensations which bring his degradation; the mere presence of the tempting condition will lead him to commit the wrong because his resisting sense is dead. Such people are moral jelly-fishes whose organization is devoid of backbone.

Explosive will may be caused by exaggerated impulse to act. "What to us would be a passing suggestion of a mere possibility becomes a gnawing, craving tendency to act." The kleptomaniac must steal, the drunkard must drink, the drug fiend must have his drug even if murder is the means of attainment. Hospital and prison records give evidence of the fact that men and women have deliberately chopped off fingers and hands, knowing that a dose of liquor would be administered immediately. While the average person is free from this exaggerated form of explosive will, it is nevertheless found that "Most people have the potentiality of this disease. To few has it not happened to conceive after getting into bed that they have forgotten to lock the front door or turn out the entry gas. And few of us have not on some occasion gotten up to repeat the performance, less because we

believed in the reality of the omission, but because only so could we banish the worrying doubt and get to sleep." Ideas are ideo-motor, but under these circumstances the "ideo" fades into insignificance in the face of the "motor" element.

Teachers meet impulsive children with tendencies toward explosive wills in every class. They often make the acquaintance of these pupils under very disagreeable circumstances. In thoughtless moments teachers give commands with no regard as to their ability to enforce obedience. In the climax which ensues the teacher realizes that whether she be right or wrong she must be the winner if any child challenges her authority. The young teacher is warned never to force an issue before the class unless victory is assured. The suggestion is vitally important, because the teacher's prestige and the future good conduct of every child are jeopardized should the teacher lose in the battle of wills with a pupil of impulsive nature.

Obstructed Will.—Opposed to these types of explosive will there is a class of "Hamlets" who give themselves over to long discourses, keen discontent, who indulge in extreme pessimism, but who are incapable of action. The "ideo" element of consciousness completely overwhelms the "motor." Life is one continuous struggle between knowledge and action. These people usually see our shortcomings, feel keenly the need of a change, but never take the initiative. In this class we find the "sentimentalists, impressionists, idle schemers, the drunkards, and the dead beats," in a word, the well-intentioned riffraff of society.

A mild form of the obstructed will is found in the case of the child suffering from what is commonly called the "balky will." At a particular time he cannot understand nor execute what, in normal moments, is rather simple. In such cases safe and sane treatment requires that the teacher do nothing until the child's confusion and temporary inability have passed. Nothing is quite so pernicious as the advice given to young teachers, "break the will," "force the

child." This only makes the teacher act the rôle of King Canute, resisting the irresistible.

What Is Conduct?—All these forms of will and the resulting expressions show that human conduct is the resultant of the two tendencies of inhibition and impulse to action. When there is a nicely adjusted balance, a mutually reciprocal relationship between the two, conduct is normal, otherwise one or the other of the forms of perverse conduct described in the preceding paragraphs will result. A moment's self-analysis will show how wise is this struggle between inhibition and action, this adjustment in human conduct. How miserable would we be, what dangers would we bring upon ourselves, if we acted out every idea or impulse! Inhibition means hesitation, time for consideration, for play of the higher or intellectual activities. The old proverb observes, "He who hesitates is lost,"—not always; but he who never hesitates is constantly "rushing in where angels fear to tread." The first adage puts a premium on impulsive action and fails to realize that reason must be the ever-guiding star in responsible conduct. What a curse life would be if every momentary fancy or passing whim actually worked itself out in action! There is safety in the suspended judgment.

Factors in Voluntary Action.—The analysis of will can be summarized and synthesized in the answer to the question, "What, then, is a conscious act of the will?" In tracing the genesis and progress of a voluntary act we find (a) an idea of the end to be attained, (b) a desire for its attainment, (c) a belief in the possibilities of its realization, (d) a memory of similar action in the past, and (e) a sense of effort with its accompanying strain toward the achievement of the desired end. To have no foresight of an end, to have no idea of it, whether distinctly conscious or only vaguely felt, means to have no desire and thus precludes the volitional side of mentality. A mere desire is no guarantee of a voluntary act; a child yearns for the prize, but makes no effort for it because he feels the race is hopeless as far as he is concerned; belief in the possibilities of a successful issue is hence a third

requisite. But this faith in one's capabilities is impossible unless there is alive the memory of kindred action in the past. No voluntary act is ever performed unless the same or a very similar one has been performed involuntarily before. "No creature," James tells us, "not endowed with divine power can perform an act voluntarily for the first time." The genesis of voluntary action lies in the motor memories that can be aroused. Every seemingly new action when analyzed shows constituent elements involuntarily performed before. Royce emphasizes this requisite in voluntary action when he says, "Strange as the statement may seem, we cannot consciously and directly will any real, novel course of action. We can directly will an act only when we have before done that act and have so experienced that act before." The memory of similar action inspires a feeling of confidence in present desires which prompts effort and its exertion toward the attainment of the initial idea.

Variety of Action.—Activity in human life may take one of four general forms. The first is involuntary action of a purely physiological nature exemplified in the various reflexes. Such acts have no place in our study. Instinctive action forms the second group reflecting the racial determinism in individual life. The detailed study of instincts in an earlier chapter makes mere passing mention sufficient for the present purpose. The third group is comprised of habitual actions such as have been acquired during the life time of an individual and have become second nature to him. Voluntary action forms the last group and makes each person capable of consciously directed action toward self-chosen goals. This classification of action forms a climax, beginning with the blind, unreasoning, automatic, inherited actions, and ending with the deliberative, purposeful side of human conduct. Man is born with almost infinite desires for action of one kind or another. But "the intense desire for activity is in itself not sufficient." From the point of view of volitional development the problem of education is how to transform mere, blind, impulsive action to rational, intentional be-

havior. Davidson conceived the same function for education when he defined education as the process which seeks to change man from his elemental to his ideal nature. The vital question which now presents itself is, "How can this be done?" In anticipating the succeeding chapter we may answer, first, by so training the child that by dint of repetition of right action and living, proper conduct becomes habitual. And, secondly, by giving the developing child proper ideals of conduct, by surrounding him with the most wholesome and stimulating environment, by introducing such forces and factors in his life that proper conduct becomes a voluntary ideal and a self-chosen end. The closing chapters must deal with the problems of "Habit Formation," "Ethical Instruction," "Heredity," and the "Social Environment."

SUGGESTED READING

- ANGELL. *Psychology*, Chaps. 20 and 22.
BALDWIN. *Methods and Processes*, Chap. 13.
BOLTON. *Principles of Education*, Chap. 27.
HORNE. *Psychological Principles of Education*, Chap. 21.
JAMES. *Psychology (Briefer Course)*, Chap. 26.
 Talks to Teachers, Chap. 15.
SULLY. *The Teacher's Handbook of Psychology*, Part IV.

CHAPTER XXIV

HABIT AND HABIT FORMATION

Scope of Habit.—Habit is the law of nature. Because nature is the slave of habit, physical science studies her phenomena and predicts with a fair degree of certainty her future conduct. The physician makes his prescriptions confident that the habitual organic reactions will take place; the chemist combines elements and produces new compounds never doubting that the habitual synthesis will occur; the engineer plans his structures certain that the laws of stress and strain will continue in their habitual operations. No physical science is based on absolute proof and concrete demonstration of all individual cases; all science is based on faith,—faith in the uniformity of nature. Since habit holds absolute sway in nature, one concludes, *a priori*, that human life, too, is habituated and operates along a fixed routine. Conservative thinkers estimate that about ninety per cent. of human life attains no higher level than habit.

The scope of habit in human existence is as inclusive as in nature. Man shows habits of action, for he repeats the recurring activities in an automatic manner in the progress of years. Thought, too, often becomes habituated. In his reasoning the mathematician takes the same point of view toward all problems; the theorist looks at life's problems from another angle; the practical business man reduces all in terms of dollars and cents and makes his choice on the basis of the character of the balance. Within the pale of habit one finds even moral attitudes. The religious teacher judges the ethical status of any situation in terms of his divine dogma, the moralist applies his abstract law of conduct, the skeptic

usually judges each circumstance on its individual merits, the good-fellow knows only the law of pleasure in his attitude toward life's demands. Personality is clothed in habit. Habits are the very garments of the soul.

Habits and Instincts.—Although habit is so thoroughly ingrained in human life, the student must not regard it as synonymous with instinct. These two tendencies to action must be differentiated clearly. An instinct is an inherited nervous coördination; a habit is a tendency to reaction acquired in a lifetime. Instincts are characteristics of a whole class. Study the instincts of one person and you know the instincts of all people. Habit, on the contrary, is an individual characteristic, which varies with each personality. All instincts are physiologically good for they lead to preservation of life. Habit carries with it no such physiological guarantee; some habits make life safer and more economical, others sap virility and dry up the sources of energy. Instincts, having the force of generations in their craving cling with great tenacity and almost defy educational endeavor. Habit with only the accumulated tendency of a single life presents a less formidable aspect for education. The grip of habit can be broken,—not as easily as the tendency was acquired, but with conscientious effort one can free himself from its tyranny. Because instinct is racial, the problem of habit formation and habit control does not loom up with the same hopelessness as the problems of the control of instincts.

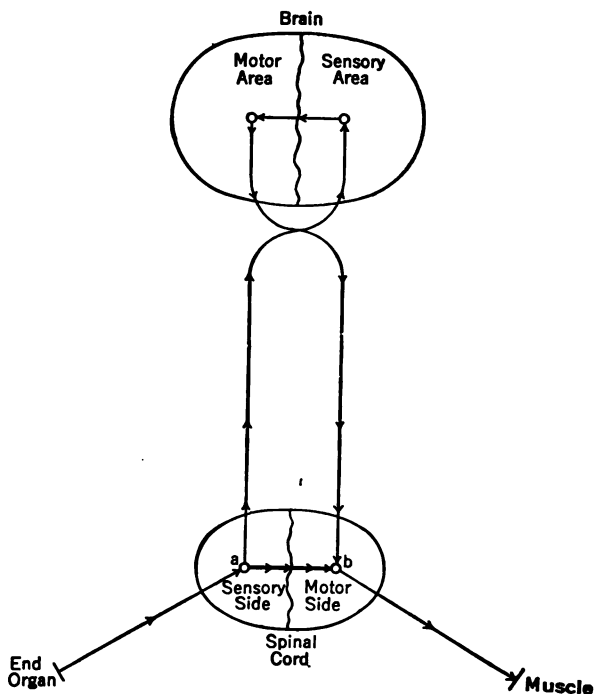
Importance of Habit in Human Action.—The inculcation of proper habits forms a vital part of the teacher's daily routine in discipline and instruction and is often regarded in education as an end in itself. This high estimate of habit is based on its far-reaching effects upon action. Habits tend first to increase efficiency of all forms of action. A passing scrutiny brings one to a realization of the fact that habit, by increasing accuracy of action and diminishing fatigue of mind and body, insures greater speed. The little girl learning to play the piano takes an aggravatingly long time before

she strikes the proper key; although she pays close attention to her practice she usually touches the wrong ones; she soon tires of her lesson, for her mind is wearied and her fingers are strained. But after months of practice every action shows increased efficiency which comes from habituation; each movement is performed in proper time, each note is struck with far greater accuracy and the hour at the piano becomes a source of pleasure and even a means of recreation.

A second vital result of habit is its tendency to mechanize the petty processes of daily life and reserve higher mentality for new coördinations. If habituation were impossible the mind would be occupied with the problems of adjusting one's clothing, eating one's food, carrying out the insignificant routine of existence; in writing or in reading all thought would go to the mechanical aspects of symbol formation and interpretation rather than to the rational phases of these activities, which give understanding. Because habit holds the mechanical activities in captivity, consciousness is set free to devote itself to new endeavor and finer adjustments. Life's plane is raised above the petty routine of physical existence; life's horizon is widened and its possibilities are made infinite.

Physiological Basis of Habituation.—It is interesting to trace the gradual change in action from the voluntary to the routine level, the steps in the inculcation of a habit. The diagram on page 440 may help by its graphic appeal. In teaching the correct position in penmanship to beginners, the teacher points out the essential elements of bodily posture, facing, placing of hand on desk, the position of wrist, the relative position of fingers, etc. The child listens attentively, watches the teacher as a model and then imitates every attitude consciously. The impressions are received by the end organs, carried along the afferent nerves to the sensory side of the cord and then transmitted to the sensory area in the brain, where these sensory appeals are interpreted and transmuted into motor impulses. The tendency to action starts in the motor area of the brain, passing through the motor side

of the cord, thence to the efferent nerves which stimulate the muscles to perform the desired action. In each of the earlier lessons this long circuit is traversed as the child consciously sets himself to assume the correct writing position. After



weeks of drill the action becomes less conscious and more automatic, because, with the repeated stimulations of the cells at "a" in the spinal cord, the cells at "b" in the motor area develop a special sensitivity and react without waiting for the warning to come in the regular circuit through the brain. The sensory stimulation at "a" leaps across, so to speak, and becomes a motor impulse at "b". A habit takes this short cut (indicated by the dark-lined arrow) and thus makes action speedier because of the shortened circuit, more

accurate because it is automatic, and less fatiguing to the mind because the nerve center is in the spinal cord.

Physiologically speaking, therefore, habit formation consists in transferring the seat of control of any appeal to consciousness from the brain to the spinal column, thus leaving the former free to new and higher adjustments. We may conclude in the words of Angell, "Without habit consciousness would never get beyond the borders of the inevitable routine. With habit, it is able to pass from victory to victory, leaving behind in captivity the special coördination of needs."

Laws Governing Habit Formation.—Having seen the scope and general importance of habit in education and human action, we must consider the conditions which govern their formation. Briefly, we may say these are four:

1. *Mechanical Cause.*—It is apparent that habits cannot form without repetition. Habits are the garments of the soul. To have these fit one must wear them a number of times so that he impresses upon them the creases which will make them peculiarly his own. Mere mechanical repetition will not suffice; the repetition must be regular and frequent. Master an action by repeating it at regular frequent intervals and the action soon masters you. There are "Habits that have us" and "Habits that we have." The difference between the two is found in the fact that the former represent habits already formed, the latter, habits in the process of forming.

Although repetition is an obvious essential in the process of habituation, it is nevertheless neglected in teaching which seeks to mechanize knowledge or action. In planning a lesson it is desirable to decide what must be rationalized and what must be mechanized. In teaching subtraction of whole numbers in problems of the type of, 57—38, the teacher must realize that, despite the Austrian method or the method of decomposition, little of the numerical operations is really understood; the aim must therefore be to mechanize the process through repetition. The mode of subtraction

must become a habit; the sooner the drill is applied, the sooner will the child mechanize the procedure.

It is not unusual to find a teacher of a particular grade trying to teach all the rules of punctuation or trying to eradicate all forms of incorrect oral speech. Each rule or each incorrect sound receives only passing attention. The results are discouraging, but not surprising; the child still remains indifferent to punctuation, the same inaccuracies of pronunciation are heard. Repetition, the price of habit formation, is lacking in such teaching. Supervisors and principals of schools must list all the rules of punctuation that are worth while, all the common errors of speech that are serious enough to merit class attention. They must then make definite assignments to each grade so that a teacher in a specific grade is responsible only for the rules governing the uses of the comma in punctuation and for the correction of two or three specific errors of speech. In this way repetition is assured and the children acquire the habit of using commas correctly before the end of the term and the habit of pronouncing *wh*, *th*, and *ing* in accordance with the standards of English. Proper organization, subdivision and allotment of the formal side of language study afford each grade teacher opportunity for drill which produces proper mechanization.

2. *Physiological Cause.*—But why should repetition so ingrain an action that it becomes second nature? The explanation lies in the physiological phenomenon that was noted in a very early connection in our study, viz., the plasticity of the nervous system. It was seen that every impression makes its nerve rut, every repetition of the original impression simply deepens the nerve paths already made. Each repetition of a past action, or a familiar impulse enables it to travel with less friction along a well-marked groove; it is like the wagon falling into the old wheel ruts on the road. Youth is therefore the period of habit formation, for then the system is most plastic and yields easily to the impress made upon it. Habits are little more than the stored-up modifications of the

nervous system produced by mere mechanical repetitions. Youth is the designer of manhood; it is the period in which we are in the molding shop.

3. *Psychological Cause.*—From a psychic point of view, habit is an application of the law of association of ideas. Because of the repetition the mind learns to associate the coming of “a” with the subsequent action “b”. Whether there is logical connection or not makes no difference; present the one and the other leaps up into the mind with irresistible force and works itself out before we are fully aware of it. The intimacy in the relationship between the idea and action is the psychological explanation of habit.

4. *Personality.*—A final consideration determining the ease with which habits are acquired is personality. The person who has a strong social nature, who is weak-willed, falls into the rut quickly and is hardly conscious that he is taking on an action in which he is being mastered rather than one in which he is master. He who has a strong individuating nature and strong will power resists the tendency of habit formation which turns him into an automatic machine impelled by past tendencies rather than present deliberation. Habits, both good and bad, are very often the result of human weakness and manifestations of puerile will power. The fact that habits are generally not indices of strong individuality must in no way be regarded as militating against their utility in the economy of life.

Dangers in Habit Formation.—There is a dangerous side to habit formation that should keep us on the qui vive, constantly guarding the process. To begin with, we have the obvious danger,—there is no guarantee that the habits contracted will be desirable. These bad habits hold us in bondage; escape from their thralldom is not easy. Very often changing fixed habits of life brings with it bad mental and physical effects. The drunkard cannot be turned into a total abstainer without undermining his constitution; the athletic student who has developed physical habits finds that the sedentary life forced upon him by examinations affects his

heart. A bad habit is often supplanted by one less bad; this in its turn by one still less undesirable; only in this gradual way, which requires time and effort, can one safely rid himself of his past self.

A second limitation in habit formation is seen in the fact that habits are formed during the period of plasticity; but this is the period of youth when the individual cannot judge, when he cannot discriminate between desirable and undesirable. But in later life, when maturity brings the light of reason, he realizes his errors; then it is too late, for the whole nervous apparatus has hardened and he is held fast in its rigidity. We stumble upon our habits in the darkness of life. The light of maturity is often too late to guide us in our erring ways.

Another undesirable aspect of habits is that they deaden the sensibilities and make us indifferent where we ought to be most concerned. Experience that is habituated brings little emotional accompaniment and does not stir the mind. The country resident is confused by the constant din and noise of the city, by the hustle and bustle of the urban streets; his city cousin pays no attention to these. The rural toilers go about their work totally oblivious of the beauty and the magnificence of nature about them. The city dweller is alive to every change of color, of shade, of scenery. The best criticism of the weaknesses and limitations of our government was written by an Englishman, who received his training and education in England. This is no mere accident. It is explicable apart from his native ability. Over-familiarity with American government has made the citizen blind to inherent defects. The fresh mind is struck at once by them and they loom up as serious limitations. The casual observer is always amazed as he watches the experienced charity worker interviewing an applicant for relief. Every detail of the sufferer's story that racks the human heart with sorrow and calls forth deepest sympathy, he takes down in cold blood as answers to the regular stereotyped items of the printed application blank. Repetition of similar experience has so

dulled his sensibilities that conditions, which stir intense pity in others, find him thoroughly calloused. Workers in very hazardous trades become so accustomed to the sight of bodily injury that they show little interest when their fellow toilers are maimed in the discharge of their duty.

This same undesirable side of habit has its application in every possible phase of human life. In all movements for reform, the great problem of the leader is to awaken the people from the lethargy into which they have sunk because of habitual experience. The Russian peasant has always been held in abject serfdom; he is therefore insensible to his own misery. Every social leader succeeds only when the deadening forces of custom and social habit are broken. Habit as a controlling factor in human life cannot receive unreserved commendation.

The Control of Habits.—In attempting to direct the tendency toward habit formation, we are confronted by two problems, viz., "How to form habits" and "How to break a habit." The inculcation of habits will be rendered easier if the teacher will approach the problem through motivation. There must be stirred in the child a desire to acquire the specific habit under consideration. In the endeavor to make punctuality, neatness, correct posture in penmanship, etc., habits, the teacher must show the child his need of each of these for his future well-being. Once motive is aroused, sincere coöperation on the part of the child is assured. Clear perception of the habit to be formed helps the child materially in his efforts to master an action. We must be sure that the child has an accurate visual impression of the slant and the uniformity that must be habituated in penmanship, that he understands clearly how greater neatness can be attained in all written work, etc. After the proposed habit has been motivated and clearly comprehended by the pupil, the law of repetition must be applied with a rigor that shuts out the possibility of a single exception.

The problem of "How to break habits" is not very frequent in the strict sense of the phraseology. When habits are

deemed undesirable they are usually neglected and the individual proceeds to acquire a new habit, one more desirable and tending to counteract its predecessor. The problem resolves itself very often into one of replacement rather than displacement. The child who has developed the habit of doing work carelessly and slovenly is led to keep his hands clean, to place a blotter under his moist fingers in all written work, to use a ruler in drawing all lines, etc. By constant inspection and supervision these practices are repeated until the habits of care and neatness are evolved. The old habit dies a natural death, although nothing was done directly to break its hold. Good habits have therefore an expulsive power over bad ones, just as the better emotions preclude and expel the less desirable ones from the mind.

The effort to break a habit or to acquire a habit which is designed to nullify an older but an undesirable one is materially minimized if the traditional cautions are kept in mind. Chief among them we must mention the following:

(1) Force the right action; preaching and mere resolving are futile. Habit is usually a form of action; the only method of counteracting action is through action. Less resolution, more execution is the law of habit formation.

(2) The individual must decide on a vigorous initiative. He must burden himself with obligations for failure to live up to his resolution, so that he will have good cause to resist the temptation to yield. James cites an interesting story of the man who advertised a reward of fifty gulden to any one who found him in a public ale house.

(3) Beware of the exception. The individual must not indulge in self-delusions of the form of, "This time doesn't count," "Beginning with next Monday I shall" It may not count with the victim of the habit, but it does with the nervous system. The exception restimulates a nervous path eager to respond at a time when one is most anxious to dim it through disuse. Where we are trying to rid our children of such undesirable habits as chewing gum, throwing papers about the room, biting finger nails, etc., "general re-

mindings" are exceedingly helpful. Badges, ribbons, buttons, mottoes, etc., bearing the reminder help to keep before the children's minds the need of persistently refraining from the objectionable act.

An old religious story tells of a large "Record Book" in which each one's debit and credit accounts of life were recorded by a "Recording Angel." The tale is not as fanciful as it appears at first sight. It is only a figurative description of a stern reality. Each individual is his own "Recording Angel," each one's nervous system is his "Record Book." A more faithful system of record keeping has never yet been devised.

(4) A feeling of confidence in one's ability to finally achieve success is absolutely essential. The victim of an undesirable habit cannot free himself from its fetters because he approaches the attempt to break the old routine with a feeling of helpless impotence. The grave danger of the habitué is the helpless plea, "It's no use." In struggling with a habit we succeed only as we sincerely believe in our ability to attain ultimate success.

(5) In seeking to control habits the same methods applicable to the direction of instincts can well be applied. The three forms of control are disuse, punishment, and substitution. Disuse is the least educational method, for it is a mode of repression. Merely to command, "Do not do so," affords the least guarantee that an action for which there is a natural yearning and for which the whole nervous system is attuned, will be suppressed permanently. This method requires constant direction from outside agents and develops a spirit of dependence rather than power for self-direction. Punishment is little more efficacious, for it applies only when the punishment is a natural consequence of the act and brings discomfort which far outweighs the pleasure derived from an indulgence in the habit. It is evident that such forms of punishment are few and are used on rare occasions. This second mode of control also necessitates direction by the teacher, constant watching and threatening, pressure from

without rather than from within. Control of habits by substitution realizes that the tendency in a habit may be desirable, but that the end alone is objectionable. This method allows the habit to express itself and concerns itself with an effort to turn the action toward proper ends. A child may have acquired a desire for excitement in all forms of chance; this interest leads him to gamble with dice or to bet. The speediest cure that can be effected is to develop in such a child an active interest in athletics, which leads him to participate in all games. Athletics is replete with situations affording the excitement of chance, but it is a conventional speculation, a legitimate gamble.

Conclusions for Teaching.—There are important deductions that must be made from our knowledge of habit formation. These are vital in all teaching. The first conclusion is the answer to the question, "Can Habits be Generalized?" Habit, it was seen, is a fixed reaction to a definite stimulus. A general habit is in the very nature of the case an impossibility. The problem of generalized habits is only a restatement of the doctrine of formal discipline for it posits the question, "Can a habit of thought or the habit of systematic arrangement in arithmetic be applied in all other subjects where thought and systematized form are essential?" The analysis of formal discipline answered the question for us. Hence it follows that habits developed in one experience are applicable in other situations in direct proportion to their similarity. The habit of concentration developed in arithmetic materially aids concentration in any other academic subject, but the habit of proper arrangement of work in a problem does not guarantee equal ability in other forms of systematization.

Each teacher must decide what habits can be inculcated through each subject and then by a process of repetition in a series of drill lessons endeavor to attain them. Every subject can be made to yield at least three groups of habits, viz., (1) mechanical habits, (2) mental habits, and (3) subject habits. Taking arithmetic as a subject for illustration,

we find that it yields the following habits: mechanical habits, —neatness, systematic form of work, accuracy; mental habits, —concentration, analytical reasoning in a problem, a mode of attacking a similar situation; subject habits,—basic facts in tables of weights and measures, four processes as applied to whole numbers, common and decimal fractions, verifying answers, etc. The habits which the term's work in arithmetic can yield should be regarded as the minimum requirement of each child. All methods of teaching and class management should aim at a realization of these habits as their primary function.

A second conclusion for the teacher is that in trying to inculcate habits through any subject we should, in many instances, follow the mode of habit formation in real life. In the course of experience habits are acquired blindly; in the course of maturing they are gradually understood by the individual. The child learns to walk, talk, adjust his clothing, behave at table, etc., before there is a comprehension of what he is doing. Much time would be saved and useful energy conserved if in our teaching we tried to make certain processes habitual before expecting a thorough comprehension of them. In teaching such topics as division, multiplication by numbers of two orders, the least common denominator of fractions of the type of $\frac{1}{2}$, $\frac{2}{3}$, $\frac{3}{4}$, $\frac{4}{5}$, it is best to habituate the solution and wait for time and deeper insight into number to make clear the painful series of "whys" and "wherefores." There seems to be a popular superstition that the sequence must always be "From idea to habit." There are innumerable teaching situations in which the opposite order is both desirable and legitimate.

A third conclusion of the study of habit is the message which habit has for teacher and pupil. To the teacher, habit is one of the primary functions of education. The object of all class-room instruction in discipline is to establish such coördination in the child that proper thought and action are habituated. To thinkers of the type of James, the inculcation of proper habits is the sole aim of education. Address-

ing himself to the teacher, he says, "You should regard your professional task as if it consisted chiefly and essentially in training the pupil for proper behavior; taking behavior not in the narrow sense of manners, but in the very widest possible sense, as including every possible sort of fit reaction in the circumstances in which he may find himself brought by life's vicissitudes."

To the teacher, habit reflects the greatness and the nobility of his work. It shows him how truly an artist's work it is that he is doing. Just as the sculptor impresses his ideals and his genius on the plastic clay, so does the teacher mold men and shape human character out of the plastic nervous system which the child brings to him.

To the child, habit sounds a warning note. It shows him clearly its sinister side fraught with danger and pitfall from which escape is often impossible. Occasional talks on habits, their uses and their dangers, suggestions for weakening their hold on character, should form an important part of every elementary and high school course of study in ethics.

There is danger even in good habits. Habit is fixed and makes for a life of repetition and duplication, but not for progress. Habits must be improved and made progressive, otherwise life becomes static. It is because of the absolute tyranny inherent in habit that Rousseau prescribes for Emile an education free from all habits except the habit not to acquire habits.

SUGGESTED READING

- ANGELL. *Psychology*, pp. 52-63.
BAGLEY. *Educative Process*, Chaps. 7 and 8.
HORNE. *Psychological Principles of Education*, Chap. 26.
JAMES. *Psychology (Briefer Course)*, Chap. 10.
Talks to Teachers, Chap. 8.
OPPENHEIM. *Mental Growth and Control*, Chap. 7.
BOWE. *Habit Formation and the Science of Teaching*.

CHAPTER XXV

EDUCATION FOR SOCIAL RESPONSIBILITY

Limitations of Habits as Ultimate Ends of Human Conduct.

—A preceding chapter outlined four possibilities of human action, viz., physiological reflexes, instinctive reactions, habitual action, and volitional activity. The first of these belongs to the province of physiology, the second and the third have been treated fully in a foregoing chapter; there remains, therefore, a consideration of volitional activity, which is the measure of human conduct. The crowning glory of all action cannot be accorded to habit. To do the right because the whole nervous system and mental organization are attuned to the proper reaction does not guarantee an ability to meet a new situation and come to a conclusion equally moral. The loftiest plane of human conduct is that on which, through conscious choice and mature deliberation, the proper goal is selected and every effort is strained for its realization. Such endeavor, the psychologist calls volitional activity. Its chief characteristics are its ability to meet new ends, its striving toward a definite purpose, its possibilities for hesitation in action, suspension in judgment and changeability in direction of activity.

Volitional Ability the Measure of Developed Will.—

The efficiency of volitional activity determines the degree of development of will. This observation, evident as any axiom in mathematics, is often completely overlooked in the layman's discussion of will. The popular notion always holds that victory in the face of obstacles is a determining characteristic of a well-developed will, that he who does right despite almost uncontrollable craving and temptation to do

wrong, gives evidence of a well-developed will, that he who is tempted but does not deceive nor take advantage has attained an enviable development of volitional power.

What is a Developed Will?—The fallacy in this popular conception becomes apparent upon closer scrutiny of the moral situation. Granting the lay conception to be correct it would follow that the person who, without temptation, does what is right is weak-willed and that moral victory without a keen struggle is an evidence of volitional impotence. If control of temptation is the measure of character, then the honest man who does not feel the demon's lure must be weak indeed. Psychologically, the strong will is the trained and the controlled will. He who hears temptation's call gives evidence of a will that lacks training and control. He who wins in the face of alluring temptations deserves credit, but he who does the right because it looms up as the only light on the individual's moral horizon, not only wins admiration but merits emulation.

Ethical Instruction and Volitional Life

The Plea for Ethical Instruction.—Conduct of such a high moral order is the moral plane to which we must raise the volitional life of our students. That this can be done is the confident boast of the enthusiasts of moral instruction. To them character is a cumulative effect, and a vigorous, personal and inspiring presentation of a course in ethics is an agent of potent influence. Ethical instruction, they argue, is a special need in present social life. The pressure of poverty, poor housing, city congestion with its attending demoralizing forces, the weakening of family ties and the decreasing sanctity of the home, where mothers are wage earners or fathers see their children for a few passing moments each day, the alienation of the masses from the church, and the decreasing response to the appeal of religion,—these are only a few tendencies typical of the modern social unrest. The school seems, therefore, the only formal institution that can strengthen the moral fiber in human conduct.

Limitations of Ethical Instruction.—Many sincere teachers feel that the advocates of moral instruction are overreaching themselves in their enthusiasm. It is argued that ethics is the science of righteousness. It is an explanation of conduct, but not necessarily a means of directing action. Ethics makes an intellectual appeal that brings conviction; there is a wide breach, however, between conviction and action. The deplorable absence of social conscience shows the futility of mere preaching and teaching of twenty centuries of Christianity. In France moral instruction is dignified by a very prominent place in the curriculum. The French teacher is most eloquent in giving evidence of the limitations of formal ethics teaching. The priggishness which some children develop and the hypocritical twaddle in which others indulge can hardly be offset by the systematic moral analysis that they learn. The ethical standards they chatter about, the adult moral judgments which they voice are not conducive to the freest and most sincere expression of child interest and really hamper moral development. Life's sterner needs, not the conscious analysis of abstract morality, will train for ethical conduct. "The student pushing steadily toward his goal in spite of poverty and grinding labor; the teacher, who, though unappreciated and poorly paid, yet performs every duty with conscientious thoroughness; the man who stands firm in the face of temptation; the person whom heredity or circumstance has handicapped, but who, nevertheless, courageously fights his battle; the countless men and women everywhere whose names are not known to fame, but who stand in the hard places, bearing the heat and toil with brave, unflinching hearts—these are the ones who are developing a moral fiber and strength of will which will stand in the day of stress. Better a thousand times such training as this in the thick of life's real conflict than any volitional calisthenics or priggish self-denials entered into solely for the training of the will."

Justification for Systematic Ethical Instruction.—On the other hand, the indictment against ethical instruction in the

school overstates the case. It is undoubtedly true that a mere knowledge of what is right is no guarantee of right action, but to be ignorant of the proper ideals makes moral conduct, at best, only an accident. With children of school age ethical instruction does not outline the science of righteousness; it merely offers the "why" of the child's own action so that he may realize the propriety or the impropriety of his conduct in a particular experience. Conceptions and ideals of proper conduct can be inculcated in children of school age. The evidence which parents give to prove this assertion is augmented by the experience of directors of social centers and children's clubs. Boys of thirteen, who begin club life with no respect for law and order, can at the end of a year conduct their own meetings and follow parliamentary procedure. Children who, in the first year of club life, see only one use of the club's treasury and expend it for team uniforms and outings will, in the second year, under proper guidance, vote away a good part of their funds for social and charitable purposes. The child of adolescent age does not always take on faith the standards of right and wrong as they are imposed upon him. In this age of doubt, moral instruction seeks to offer ethical standards which may guide him in his conscious choice.

Suggestions for Volitional Development.—1. The sponsors for systematic moral training have numerous suggestions for parents and teachers. They urge that we develop the attitude and the habit of self-help by training children in the ordinary movements as soon as possible. The suggestion previously made that children can be taught to dress themselves at an early age if we make for them children's shoes and clothes rather than small adult garments, is an illustration of the point under discussion. The psychological law that motor culture is moral culture affords more than ample justification for this initial prescription.

2. "Train for conduct through proper discipline, in which all commands are interpreted to the child as socially necessary," is the second counsel. The child should be made

to realize that if he lived an individual life he would not be asked to refrain from throwing litter into the roadway, or unnecessary paper on the floor of his class-room; no fixed time would be set for his arrival in school; he could talk to the teacher without awaiting his turn; in short, he would not be bound by the countless regulations that seem to hem in his life. Because he is a member of society he must obey social regulations. The child who obeys from a sense of social need is receiving a training in social conduct.

3. The curriculum is the third factor in moral teaching. Through history, literature, civics, ethics it gives the child an ideational basis for proper action. If consciousness is *ideo-motor* this thought appeal is the first step in the direction of social action.

4. Suggesting to the child the power of his own will is often an effective means of arousing sincere effort. Without the self-confidence, which suggestion can inspire, success is almost impossible. James emphasizes this point when he says: "Tell yourself you can succeed and make necessary preparations for doing so." This process of *auto-suggestion* does not make us blind to our limitations but rather enables us to approximate our greatest possibilities.

5. Will is developed in every free and spontaneous act on the part of the child. It is wise, therefore, to allow children the opportunity for free choice whenever practical. The child's life is often minutely directed, lived throughout between two guide lines. It is not wise to continually force the child to walk in the path trod for him; he must be allowed, when the opportunity offers itself, to blaze his own trail in the moral world.

6. Social life in a social group is an important agent for the development of will. In club life and club organization children learn the lessons of self-government and social control. Just as soon as the child comes to a realization of the sanctity of his own rights of free speech, free vote, participation in the pleasurable activities of the club, he invariably begins to respect the rights of others. Preparation for

social conduct through social conduct is the contribution of club life toward character development.

There are additional means of developing volitional activity and a sense of social responsibility. The student will find these discussed and illustrated in the study of social sentiment in the chapter on "Education of the Emotions." We must conclude our cursory review of the problem of moral instruction and ethical guidance by noting the ultimate success of moral instruction as an agent in character development. We saw in the early paragraphs of this chapter the extravagant hopes and the fond dreams of the enthusiasts for formal ethical instruction. The practical teacher, enthusiastic in her work and its possibilities, realizes how far from expectations are the actual results of direct, systematic moral instruction.

Reasons for the Discrepancy between Possibilities and Results of Moral Instruction.—The great discrepancy between possibilities anticipated and results achieved must not discourage the sincere teacher. The school has too great an intellectual task to give more than passing attention to character development. (1) To-day the school is an intellectual factor, interested only in turning out a mind heavily laden with fact. This conception of the function of the school is neither sound theoretically nor desirable practically, but, with the overburdened curricula characteristic of the educational systems of this country, the teacher is overwhelmed by the intellectual burden imposed upon her.

(2) The discouraged teacher must also bear in mind that character and moral stamina are the results of long training and come to the fullest development in mature years. The faith that every moral impulse implanted in the mind will come to final fruition must never fail the teacher.

(3) Aside from these inherent limitations it is doubtful whether the school can counteract the desocializing influences which so frequently obtain in the social environment of the children who are in greatest need of character development. Older ethics taught that moral character is inculcated through

teaching moral ideas and then bolstering them up by as many forms of proof, argument, and religious sanction as possible. Social ethics bares the fallacy of such a smug conceit. It teaches us very vividly that human conduct is a cumulative result, the silent and gradual influence of the pressure of poverty, the miseries of tenement dwelling, habits of uncleanliness, the temptations of city life, the love of clothes, the craving of sex, the limited means for recreation, the sins of forefathers, the health of the individual himself, and the host of socially devitalizing tendencies of modern life.

(4) Society's hope for a new generation of worthier men and women lies in the prevention and the minimizing of the desocializing and demoralizing forces in the social environment. Education must look to a new social environment, a fertile bed from which character more lovely and harmonious will spring.

Human Conduct and Social Environment.—The level of development which any human being can attain is determined by definite forces and factors. We can sum these up under five heads. The first of these is native endowment, which refers to the capabilities given to each individual at birth. Education cannot increase this birth gift; it merely seeks to develop it to its highest possibilities. Self-activity is the second. Previous study taught us that it is the natural tendency of the mind to express its native endowment, to make realities of latent possibilities. The problem of self-activity has already received extended analysis and needs nothing more than mere mention in this connection. Inherited tendencies form the third set of influences molding human nature. The physical environment and the social environment constitute the fourth and the fifth of these factors in human development. Inheritance and Environment are therefore the two general topics that we must study in concluding this survey of education.

The Problem of Inheritance, or the Arrival of the Fittest

Meaning of Inheritance.—Inheritance may be defined simply as, "Like tends to beget like," or, with greater scientific precision, as "The transmission and reproduction of ancestral traits in descendants." It is as characteristic of plant life as of animal life. How far-reaching it is in human life one does not realize until he has tabulated the undoubted heritage which he receives from his ancestral lines.

Scope of Inheritance.—Physiological Inheritance.—Man is physiologically and organically determined by his forefathers. Scientific data show the inheritance of facial characteristics, size of heart and principal blood vessels, size of thorax, size of brain, diathesis to disease, congenital blindness, color blindness, congenital deafness; longevity is doubtless an ancestral gift. This list of physiological inheritance is by no means complete, as recent investigations prove.

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Mode of Inheritance.—Students of heredity have so far formulated several laws of inheritance that include large numbers of distinct characteristics among human beings. The subject is new, and daily contributions are received at experimental and research stations which indicate the wider application of these fundamental laws. The work of the Mendelian students has established the principle that organisms may be analyzed into distinct "unit characters" which are inherited *independently*. Each individual does not, therefore,

inherit the characteristics of parents as a whole, but may inherit any of these "unit characters" from each. These "unit characters" are in no way influenced by the presence, either, of other complementary "unit characters" or of the other parent. If the male parent has the definite "unit characters" *a* (brown eyes) and *b* (red hair), and the female parent has the complementary "unit characters" *A* (hazel eyes) and *B* (black hair), it may be supposed that the child will inherit *A*, *a*, *B*, or *a*, *b*, *B*, or *A*, *a*, *b*, or any mosaic of these "unit characters"; but, according to the law of dominance of complementary or contrary "unit characters," the child will possess only one combination, viz.: *a*, *B*, brown-eyed, black-haired "unit characters."

Inheritance is often affected by the intimacy of blood relationship that exists between parents. Marriage of kin is technically known as "inbreeding," a form of union in which heredity is often intensified for undesirable ends in proportion to the proximity of the relationship between parents. Very close inbreeding tends to bring to the surface unstable sanity and inherent weakness of the line. Both parents having the same ancestors often produce a union of the characteristics of the whole line. It is argued that, while close inbreeding has many attending dangers, racial inbreeding preserves the strength and the characteristic vitality of the race; that the purity of the Jewish racial blood is an explanation of the virility of the Hebrews. But serious students of history usually hold the contrary view, viz., that racial inbreeding produces racial puerility, and offer evidence to show that the Jews gained in virility only as they mixed with other races and introduced new blood into their own. In artificial breeding of stock it is usual to alternate inbreeding with cross breeding; the argument which the professional breeders give is that in this way the inherent weaknesses in the line are counteracted and the characteristic strength is preserved and intensified.

Sir Francis Galton tried to reduce the degree of inheritance to a law which holds, "Two parents between them

contribute on an average one-half of each inherited faculty, each of them contributing one-quarter of it; the four grandparents contribute between them one-quarter or each of them one-sixteenth, etc." From the facts that we noted of the nature of inheritance we can readily conclude that, while this seems to be true of a community *en masse*, it is doubtful whether such mathematical nicety prevails in the determinism of any one individual. It must also be remembered that inherited qualities become patent at different stages in the development of an individual; few of them are seen at birth, while most of them make themselves manifest during adolescent life. Experts in vocational guidance should seek, therefore, in the period of adolescence, the promise of future gifts and special aptitudes.

Inheritance of Acquired Characteristics.—The problem of inheritance which is to-day occupying the attention of leading biologists is the transmission of acquired characteristics. We have indisputable evidence of racial inheritance; we are fully alive to its significance for race betterment or deterioration. But when we come to the inheritance of acquired characteristics we find evidence lacking and scientists divided in their opinions. The final solution of this problem will be the great contribution which biology has yet to make to education and sociology.

Why is This So Vital a Topic?—Acquired characteristics are as numerous as the infinite possibilities of education. Some individuals acquire physical characteristics like muscular development, muscular degeneration, skill in movement, scars, mutilations, and the like. Mental characteristics not possessed in the earlier years in life may also be developed by any individual. Typical among these we find proficiency in a special subject, ability in certain forms of thought, keenness of perception, appreciation of the arts or a dislike for a particular form of an art, etc. Moral characteristics may also be acquired, for we find persons of devout parents showing indifference to religion in later life, those free from pernicious habits falling victims to them in later days, while

others who are slaves of undesirable impulses in youth free themselves from their bondage as they grow older. Will these characteristics developed during the life of a parent be transmitted to his progeny? An individual whose ancestral line shows moral taint acquires, through influence of new surroundings, worthy ideals of character which he makes basic in his daily life. Will his child come into the world with no higher moral destiny than that of the ancestral line? A parent having tubercular tendencies develops a rugged body and renders himself immune to the ravages of disease through a life of outdoor activity and clean habits. Will the offspring be born the same weakling and grow up the same physical wreck, or will the child be better equipped for the physical struggles of life? These are vexing and vital problems. If acquired characteristics are not transmitted it is evident that these people have no moral right to become parents. How hopeless and discouraging is the task of education if each succeeding generation has the same meager resources and the same undesirable tendencies as its predecessors!

Science Not Unanimous In Its Answer.—Education turns to biology for the answer and finds that the leading biologists either express doubt or a decided negative, brushing aside the so-called “stock of evidence on the transmissibility of acquired characteristics” as spurious or utterly unscientific. Every argument advanced for the affirmative side of the question has failed to withstand the scrutiny of modern scientific investigation. Even Brown-Sequard’s evidence of the inheritance of epilepsy induced in guinea pigs has been discredited. The controversy, though not a new one, is just as intense to-day as it ever was. It may aid the student to take a bird’s-eye survey of this great biological problem.

The Affirmative Side.—Darwin, Haeckel, Eimer, Spencer, and Lamarck are a few of the illustrious names of the champions of the affirmative side. We may submit the following as typical of the innumerable data they advance in support

of their contention: Blindness of the fishes in Mammoth Cave and of the moles in the earth is inherited; organs unused for generations become atrophied in the new-born members of the species; "bad eyes among watchmakers and nervousity developed in certain trades" are also transmitted. Good feeding increases the size and the possibilities of stock in breeding; the better body developed in the parent animal produces offspring capable of greater physical development; the origin of the trotting horse shows the results of careful breeding of animals, whose capacity for speed in locomotion is taxed to the utmost; after years of breeding experts have now developed the "trotting blood" in animals; ducks with large wings and short legs were bred and confined for a few generations and it was found that the wings of succeeding offspring were degenerating, while the legs were growing longer and stronger. "Is this not proof of the inheritance of acquired characteristics?" the Lamarckian asks. If we deny this stand, then, Spencer asks, "How can we explain instincts?" "Either there has been inheritance of acquired characteristics or there has been no evolution."

The Negative Side.—The negative side of the problem counts among its supporters the three great scientists, Weismann, Galton, and Karl Pearson. They point out clearly the sharp line that must be drawn between scientific inference and conclusions based upon accidental variation. Every animal has a wide latitude of possibilities within its own species, there is a maximum and a minimum point in its progressive development. Cattle can become emaciated to the verge of death or they can be fattened to their highest possibilities. Legs and wings of ducks have no absolute length or fixed proportion; they can vary from very long to exceedingly short. The speed of which horses are capable varies as their other physical possibilities. Under favorable conditions the limit of maximum possibilities is attained and the latent capabilities of the species are realized. But with the best fodder cattle will not grow beyond a fixed limit; with the longest confinement wings of ducks will not become dwarfed

below a set standard and with the most expert breeding the time of the trotting horse cannot be reduced appreciably below the lowest records now held. All the characteristics mentioned in the argument for the affirmative are native to the species and not acquired. It is therefore proof that does not prove. We have yet to prove that blindness of the fishes in Mammoth Cave is not due to the development of a sport among the fishes in the cave, or that the fishes originally had the sense of sight. Science is still to gather reliable evidence that the child of the individual whose sight was impaired in a particular trade will start life handicapped with "bad eyes." We still have to prove the mode of transmission of even germinal variations, hence the problems of organic variation and somatogenesis must not be befogged by unwarranted conclusions from passing observations.

Evidence in support of the failure to transmit acquired characteristics is plentiful. Mere mutilations, such as perforations of ear or nose, circumcision among Jews, small feet of Chinese women, and totem marks among savages, are never transmitted. Most of the acquired intellectual characteristics are also not transmitted. The parents who develop a taste for art do not necessarily have artistic children. A Russian child, whose ancestors spoke only their native tongue, will, if placed in thoroughly American surroundings, acquire the English language with the same facility as the American child. The same tendency is seen in the moral sphere, for the acquired vices or virtues of parents are not necessarily given to their children. In so far as the moral life of the parent affects health and nervous vigor it has its determining influence upon progeny. Aside from this indirect effect the acquired morality or immorality of parents has no hereditary influence.

Leading Biologists Have No Evidence of Transmission of Acquired Characters.—The doctrine of the transmission of acquired characteristics would give new hope and infinite opportunity to education. We must, however, realize, to-day, that no educational practice can scientifically be based upon

it. The educator may find some support for the inheritance of acquired characters among paleontologists who are busy reconstructing life that has already been lived. We must turn for our evidence to the leaders in present day biology, to DeVries and his work on "Mutations of Plants," to Castle and his research on inheritance in guinea pigs, flies and rats, to Johannsen, the author of the "Genotype Theory," to Davenport and his investigations on inheritance in poultry and human beings, to Shull and his "Mutations and Genotypes in Plants," to East and his study on "Inheritance of Corn," to T. H. Morgan and to MacDougal. These are the men who are studying life as it is being lived to-day, and who are gathering scientific data which point to the negative side of this vital biological problem. The educator must take his cue from them rather than from the pseudo-scientists of newspaper fame.

Conclusions for Education.—*Inheritance Teaches the Truth of the Grim Doctrine of Determinism.*—We must now turn to the vital lessons which inheritance has for education. It teaches us the grim truth of the doctrine of determinism. Predestination can no longer be regarded as an idle theological theory. Physically, mentally and morally each individual is destined for that end toward which he is carried in life's current. Each generation sets the limits of possibilities for its successor. Neither education nor environment can counteract these limits, but each can help the individual realize his highest development and avert the full force of an oncoming tragedy. One must be born great to achieve greatness. Children of inferior races respond readily to educational influences, but there is a level of proficiency above which they cannot rise. This line marks their predetermined limit of development. Children of Hawaiian and New Zealand natives learn, very often, more rapidly than children of white races who have migrated to these islands. This progress is marked during early stages of memoriter drill; but when the thought appeal is made with the older students it is found that the intellectual plane is too high for

them. Teachers give evidence of the fact that these children are often almost precocious up to eleven or twelve; the mental development at that age marks a dead line above which they cannot rise.

The doctrine of determinism applies with equal force within narrower limits than the race. Each generation is the keeper of the destiny of its successors, determining for them their future powers and possibilities. This is mankind's noblest trust, for inheritance is the coefficient of racial destiny.

The Place of Eugenics Among the Sciences.—A second very serious conclusion for education makes emphatic the important position which eugenics must be given in the future. Eugenics comes to education with a sacred mission, for it seeks the study of the laws of race betterment. Sir Francis Galton, whose inspiration gave birth to the modern conception of eugenics, defines it as, "The study of agencies under social control that may improve or impair the racial qualities of future generations, either physically or mentally." In its normative aspect eugenics is far bigger than education, for it seeks the development of the race, not the individual. Education is not a creative force, it merely seeks to help the individual attain his greatest possibilities. Eugenics seeks to increase the potentialities of succeeding generations so that education may find a rich treasure of human possibilities to develop.

The Control of the Marriage Relation.—The laws of heredity point to another conclusion which interests education vitally, viz., the need of controlling marriage relations. There is no necessity for limiting the freedom of marriage, provided people realize that freedom is not license. Eugenics has gathered sufficient evidence of racial tragedies to prohibit the marriage of the incurably diseased, the sexual perverts or sexually diseased, the neurotic, the imbecile, the feeble-minded, the epileptic, and the congenitally deaf, dumb and blind. When mankind grows lax in its sacred trust, law must force the social delinquent to be loyal to it. "The

right to be born well" is humanity's silent protest against birth that brings with it its own death warrant. Society has still to learn that the physician's permission to marry is just as sacred as the sanction of religion. Religious leaders, as a body, have yet to learn that God sanctions no marriage that the physician does not approve. Not idle sentiment but grim fact forces such a positive stand.

The authorities of the New York Institute for Deaf and Dumb gathered statistics of offspring of parents both deaf and dumb. The results show that, "Resulting from 833 marriages (both parents deaf) out of 3,942 children born, 1,134 were defective, 308 of them being idiots, 145 deaf and dumb, 98 deformed, 68 epileptics, 85 blind, 38 insane, 300 scrofulous, 883 died young." After long and careful study, Echeverria found (McKim, *Heredity and Human Progress*, p. 145) that 62 epileptic males and 74 epileptic females produced 553 children; "of these latter 22 were still born; 195 died during infancy from spasms; 78 lived as epileptics; 18 lived as idiots; 39 lived as paralytics; 45 were hysterical; 6 had chorea; 11 were insane; 7 had strabismus; 27 died young from other causes than nervous diseases." This tragic record shows that only one hundred five, less than 25 per cent., were normal and healthy. But even these one hundred five undoubtedly did not escape the inevitable tragedies, for the third generation often pays the price not exacted of the second.

Heredity is never so heartless and inevitable as it is with the unfit. Studies of inheritance among the feeble-minded reveal an alarming perpetuation and increase of the sub-normal. The following chart is a graphic representation of the perpetual tragedy that is being enacted among them. The key to the symbols is simple, for black spaces represent the feeble-minded and the hopelessly diseased, the empty ones show normal progeny; all squares represent the males and the circles stand for the females. We need analyze only two typical cases to realize how inexorable are the effects of the sins of the forefathers. Chart I represents the re-

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Moral Inheritance.—The moral possibilities of man obey the same law of inheritance that obtains in physiological and intellectual life. Karl Pearson concludes, as a result of his studies, "We inherit our parents' tempers, our parents' conscientiousness, shyness, and ability as we inherit their stature, forearm, and span." Darwin tells us that families of drunkards usually become extinct in four generations. Marcé summarizes the descent of the alcohol-saturated line in the following dismal table: First generation—moral depravity, excessive indulgence in alcohol; second generation—drink mania, maniacal attacks, general paralysis; third generation—hypochondria, melancholia, impulse to suicide; fourth generation—imbecility, idiocy, extinction of the family. The Jukes family has become the classic example of the transmission of ancestral depravity. "'Max,' the progenitor of 'the Jukes,' was born in 1720. He was a drunkard who would not work, about whom little else is known. Of his descendants, 1,200 were identified as having been occupants of penal and charitable institutions, previous to 1874, none of whom ever contributed anything to the public welfare; but, on the contrary, they cost society over \$1,000 each, or a total of \$1,250,000; 310 were in poorhouses, 2,300 years in all; 300, or over one in four, died in childhood; 440 were viciously diseased; 400 physically wrecked early by their own wickedness; 50 were notorious prostitutes; 7 were murderers; 60 habitual thieves who spent an average of twelve years each in prison; 130 were convicted more or less often of crimes. The Jukes family never mingled any good blood with its own."

Mode of Inheritance.—Students of heredity have so far formulated several laws of inheritance that include large numbers of distinct characteristics among human beings. The subject is new, and daily contributions are received at experimental and research stations which indicate the wider application of these fundamental laws. The work of the Mendelian students has established the principle that organisms may be analyzed into distinct "unit characters" which are inherited *independently*. Each individual does not, therefore,

inherit the characteristics of parents as a whole, but may inherit any of these "unit characters" from each. These "unit characters" are in no way influenced by the presence, either, of other complementary "unit characters" or of the other parent. If the male parent has the definite "unit characters" *a* (brown eyes) and *b* (red hair), and the female parent has the complementary "unit characters" *A* (hazel eyes) and *B* (black hair), it may be supposed that the child will inherit *A*, *a*, *B*, or *a*, *b*, *B*, or *A*, *a*, *b*, or any mosaic of these "unit characters"; but, according to the law of dominance of complementary or contrary "unit characters," the child will possess only one combination, viz.: *a*, *B*, brown-eyed, black-haired "unit characters."

Inheritance is often affected by the intimacy of blood relationship that exists between parents. Marriage of kin is technically known as "inbreeding," a form of union in which heredity is often intensified for undesirable ends in proportion to the proximity of the relationship between parents. Very close inbreeding tends to bring to the surface unstable sanity and inherent weakness of the line. Both parents having the same ancestors often produce a union of the characteristics of the whole line. It is argued that, while close inbreeding has many attending dangers, racial inbreeding preserves the strength and the characteristic vitality of the race; that the purity of the Jewish racial blood is an explanation of the virility of the Hebrews. But serious students of history usually hold the contrary view, viz., that racial inbreeding produces racial puerility, and offer evidence to show that the Jews gained in virility only as they mixed with other races and introduced new blood into their own. In artificial breeding of stock it is usual to alternate inbreeding with cross breeding; the argument which the professional breeders give is that in this way the inherent weaknesses in the line are counteracted and the characteristic strength is preserved and intensified.

Sir Francis Galton tried to reduce the degree of inheritance to a law which holds, "Two parents between them

contribute on an average one-half of each inherited faculty, each of them contributing one-quarter of it; the four grandparents contribute between them one-quarter or each of them one-sixteenth, etc." From the facts that we noted of the nature of inheritance we can readily conclude that, while this seems to be true of a community *en masse*, it is doubtful whether such mathematical nicety prevails in the determinism of any one individual. It must also be remembered that inherited qualities become patent at different stages in the development of an individual; few of them are seen at birth, while most of them make themselves manifest during adolescent life. Experts in vocational guidance should seek, therefore, in the period of adolescence, the promise of future gifts and special aptitudes.

Inheritance of Acquired Characteristics.—The problem of inheritance which is to-day occupying the attention of leading biologists is the transmission of acquired characteristics. We have indisputable evidence of racial inheritance; we are fully alive to its significance for race betterment or deterioration. But when we come to the inheritance of acquired characteristics we find evidence lacking and scientists divided in their opinions. The final solution of this problem will be the great contribution which biology has yet to make to education and sociology.

Why is This So Vital a Topic?—Acquired characteristics are as numerous as the infinite possibilities of education. Some individuals acquire physical characteristics like muscular development, muscular degeneration, skill in movement, scars, mutilations, and the like. Mental characteristics not possessed in the earlier years in life may also be developed by any individual. Typical among these we find proficiency in a special subject, ability in certain forms of thought, keenness of perception, appreciation of the arts or a dislike for a particular form of an art, etc. Moral characteristics may also be acquired, for we find persons of devout parents showing indifference to religion in later life, those free from pernicious habits falling victims to them in later days, while

others who are slaves of undesirable impulses in youth free themselves from their bondage as they grow older. Will these characteristics developed during the life of a parent be transmitted to his progeny? An individual whose ancestral line shows moral taint acquires, through influence of new surroundings, worthy ideals of character which he makes basic in his daily life. Will his child come into the world with no higher moral destiny than that of the ancestral line? A parent having tubercular tendencies develops a rugged body and renders himself immune to the ravages of disease through a life of outdoor activity and clean habits. Will the offspring be born the same weakling and grow up the same physical wreck, or will the child be better equipped for the physical struggles of life? These are vexing and vital problems. If acquired characteristics are not transmitted it is evident that these people have no moral right to become parents. How hopeless and discouraging is the task of education if each succeeding generation has the same meager resources and the same undesirable tendencies as its predecessors!

Science Not Unanimous In Its Answer.—Education turns to biology for the answer and finds that the leading biologists either express doubt or a decided negative, brushing aside the so-called “stock of evidence on the transmissibility of acquired characteristics” as spurious or utterly unscientific. Every argument advanced for the affirmative side of the question has failed to withstand the scrutiny of modern scientific investigation. Even Brown-Sequard’s evidence of the inheritance of epilepsy induced in guinea pigs has been discredited. The controversy, though not a new one, is just as intense to-day as it ever was. It may aid the student to take a bird’s-eye survey of this great biological problem.

The Affirmative Side.—Darwin, Haeckel, Eimer, Spencer, and Lamarek are a few of the illustrious names of the champions of the affirmative side. We may submit the following as typical of the innumerable data they advance in support

of their contention: Blindness of the fishes in Mammoth Cave and of the moles in the earth is inherited; organs unused for generations become atrophied in the new-born members of the species; "bad eyes among watchmakers and nervousity developed in certain trades" are also transmitted. Good feeding increases the size and the possibilities of stock in breeding; the better body developed in the parent animal produces offspring capable of greater physical development; the origin of the trotting horse shows the results of careful breeding of animals, whose capacity for speed in locomotion is taxed to the utmost; after years of breeding experts have now developed the "trotting blood" in animals; ducks with large wings and short legs were bred and confined for a few generations and it was found that the wings of succeeding offspring were degenerating, while the legs were growing longer and stronger. "Is this not proof of the inheritance of acquired characteristics?" the Lamarckian asks. If we deny this stand, then, Spencer asks, "How can we explain instincts?" "Either there has been inheritance of acquired characteristics or there has been no evolution."

The Negative Side.—The negative side of the problem counts among its supporters the three great scientists, Weismann, Galton, and Karl Pearson. They point out clearly the sharp line that must be drawn between scientific inference and conclusions based upon accidental variation. Every animal has a wide latitude of possibilities within its own species, there is a maximum and a minimum point in its progressive development. Cattle can become emaciated to the verge of death or they can be fattened to their highest possibilities. Legs and wings of ducks have no absolute length or fixed proportion; they can vary from very long to exceedingly short. The speed of which horses are capable varies as their other physical possibilities. Under favorable conditions the limit of maximum possibilities is attained and the latent capabilities of the species are realized. But with the best fodder cattle will not grow beyond a fixed limit; with the longest confinement wings of ducks will not become dwarfed

below a set standard and with the most expert breeding the time of the trotting horse cannot be reduced appreciably below the lowest records now held. All the characteristics mentioned in the argument for the affirmative are native to the species and not acquired. It is therefore proof that does not prove. We have yet to prove that blindness of the fishes in Mammoth Cave is not due to the development of a sport among the fishes in the cave, or that the fishes originally had the sense of sight. Science is still to gather reliable evidence that the child of the individual whose sight was impaired in a particular trade will start life handicapped with "bad eyes." We still have to prove the mode of transmission of even germinal variations, hence the problems of organic variation and somatogenesis must not be befogged by unwarranted conclusions from passing observations.

Evidence in support of the failure to transmit acquired characteristics is plentiful. Mere mutilations, such as perforations of ear or nose, circumcision among Jews, small feet of Chinese women, and totem marks among savages, are never transmitted. Most of the acquired intellectual characteristics are also not transmitted. The parents who develop a taste for art do not necessarily have artistic children. A Russian child, whose ancestors spoke only their native tongue, will, if placed in thoroughly American surroundings, acquire the English language with the same facility as the American child. The same tendency is seen in the moral sphere, for the acquired vices or virtues of parents are not necessarily given to their children. In so far as the moral life of the parent affects health and nervous vigor it has its determining influence upon progeny. Aside from this indirect effect the acquired morality or immorality of parents has no hereditary influence.

Leading Biologists Have No Evidence of Transmission of Acquired Characters.—The doctrine of the transmission of acquired characteristics would give new hope and infinite opportunity to education. We must, however, realize, to-day, that no educational practice can scientifically be based upon

it. The educator may find some support for the inheritance of acquired characters among paleontologists who are busy reconstructing life that has already been lived. We must turn for our evidence to the leaders in present day biology, to DeVries and his work on "Mutations of Plants," to Castle and his research on inheritance in guinea pigs, flies and rats, to Johannsen, the author of the "Genotype Theory," to Davenport and his investigations on inheritance in poultry and human beings, to Shull and his "Mutations and Genotypes in Plants," to East and his study on "Inheritance of Corn," to T. H. Morgan and to MacDougal. These are the men who are studying life as it is being lived to-day, and who are gathering scientific data which point to the negative side of this vital biological problem. The educator must take his cue from them rather than from the pseudo-scientists of newspaper fame.

Conclusions for Education.—*Inheritance Teaches the Truth of the Grim Doctrine of Determinism.*—We must now turn to the vital lessons which inheritance has for education. It teaches us the grim truth of the doctrine of determinism. Predestination can no longer be regarded as an idle theological theory. Physically, mentally and morally each individual is destined for that end toward which he is carried in life's current. Each generation sets the limits of possibilities for its successor. Neither education nor environment can counteract these limits, but each can help the individual realize his highest development and avert the full force of an oncoming tragedy. One must be born great to achieve greatness. Children of inferior races respond readily to educational influences, but there is a level of proficiency above which they cannot rise. This line marks their predetermined limit of development. Children of Hawaiian and New Zealand natives learn, very often, more rapidly than children of white races who have migrated to these islands. This progress is marked during early stages of memoriter drill; but when the thought appeal is made with the older students it is found that the intellectual plane is too high for

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DAVENPORT. *Race Improvement in the United States.*

Principles of Breeding, Chaps. 14 and 15.

GALTON. *History of Twins*, Teachers' College Record, 1901.

RIBOT. *Heredity*.

SALEEBY. *Parenthood and Race Culture*.

THOMPSON. *Heredity*.

FRANCIS GALTON LABORATORY OF NATIONAL EUGENICS. *Report, Treasury of Human Inheritance*.

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